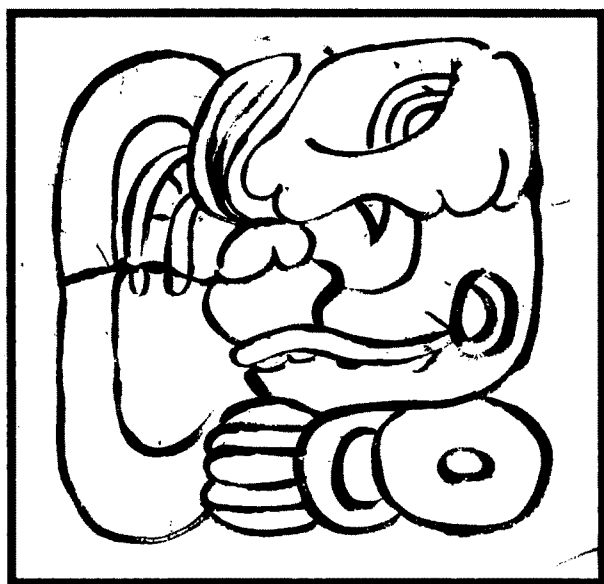


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Historical Linguistics

An Introduction



Lyle Campbell

Historical Linguistics



An Introduction

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Lyle Campbell

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Contents

<i>List of Tables</i>	ix
<i>List of Figures and Maps</i>	xii
<i>Preface</i>	xiii
<i>Acknowledgements</i>	xvi
<i>Phonetic Symbols and Conventions</i>	xvii
<i>Phonetic Symbols Chart</i>	xix
1 Introduction	1
1.1 Introduction	1
1.2 What is Historical Linguistics About?	4
1.3 Kinds of Linguistic Changes: An English Example	6
1.4 Exercises	10
2 Sound Change	16
2.1 Introduction	16
2.2 Kinds of Sound Change	17
2.3 Non-phonemic (Allophonic) Changes	19
2.4 Phonemic Changes	20
2.5 General Kinds of Sound Changes	25
2.6 Kinds of Common Sound Changes	31
2.7 Relative Chronology	43
2.8 Chain Shifts	44
2.9 Exercises	49
3 Borrowing	57
3.1 Introduction	57
3.2 What is a Loanword?	58
3.3 Why do Languages Borrow from One Another?	59
3.4 How do Words get Borrowed?	60

Contents

3.5	How do We Identify Loanwords and Determine the Direction of Borrowing?	64
3.6	Loans as Clues to Linguistic Changes in the Past	69
3.7	What Can Be Borrowed?	72
3.8	Cultural Inferences	77
3.9	Exercises	78
4	Analogical Change	89
4.1	Introduction	89
4.2	Proportional Analogy	90
4.3	Analogical Levelling	92
4.4	Analogical Extension	94
4.5	The Relationship between Analogy and Sound Change	95
4.6	Analogical Models	97
4.7	Other Kinds of Analogy	99
4.8	Exercises	105
5	The Comparative Method and Linguistic Reconstruction	108
5.1	Introduction	108
5.2	The Comparative Method Up Close and Personal	111
5.3	A Case Study	132
5.4	Indo-European and the Regularity of Sound Change	137
5.5	Basic Assumptions of the Comparative Method	146
5.6	How Realistic are Reconstructed Proto-languages?	147
5.7	Exercises	148
6	Linguistic Classification	163
6.1	Introduction	163
6.2	The World's Language Families	163
6.3	Terminology	165
6.4	How to Draw Family Trees: Subgrouping	166
6.5	Glottochronology (Lexicostatistics)	177
6.6	Exercises	186
7	Models of Linguistic Change	187
7.1	Introduction	187
7.2	The Family-tree Model	187
7.3	The Challenge from Dialectology and the 'Wave Theory'	188
7.4	Dialectology (Linguistic Geography, Dialect Geography)	191

Contents

7.5	A Framework for Investigating the Causes of Linguistic Change	194
7.6	Sociolinguistics and Language Change	195
7.7	The Issue of Lexical Diffusion	198
8	Internal Reconstruction	201
8.1	Introduction	201
8.2	Internal Reconstruction Illustrated	201
8.3	Relative Chronology	207
8.4	The Limitations of Internal Reconstruction	215
8.5	Internal Reconstruction and the Comparative Method	218
8.6	Exercises	220
9	Syntactic Change	226
9.1	Introduction	226
9.2	Mechanisms of Syntactic Change	226
9.3	Reanalysis and Extension Exemplified	231
9.4	Generative Approaches	234
9.5	Grammaticalisation	238
9.6	Syntactic Reconstruction	242
9.7	Exercises	251
10	Semantic Change and Lexical Change	254
10.1	Introduction	254
10.2	Traditional Considerations	256
10.3	Attempts to Explain Semantic Change	267
10.4	Other Kinds of Lexical Change – New Words	273
10.5	Exercises	279
11	Explaining Linguistic Change	282
11.1	Introduction	282
11.2	Early Theories	283
11.3	Internal and External Causes	286
11.4	Interaction of Causal Factors	287
11.5	Explanation and Prediction	295
12	Areal Linguistics	299
12.1	Introduction	299
12.2	Defining the Concept	299
12.3	Examples of Linguistic Areas	300
12.4	How to Determine Linguistic Areas	306

Contents

12.5	Implications of Areal Linguistics for Linguistic Reconstruction and Subgrouping	307
12.6	Areal Linguistics and Proposals of Distant Genetic Relationship	309
13	Distant Genetic Relationship	311
13.1	Introduction	311
13.2	Lexical Comparison	314
13.3	Sound Correspondences	315
13.4	Grammatical Evidence	317
13.5	Borrowing	318
13.6	Semantic Constraints	319
13.7	Onomatopoeia	320
13.8	Nursery Forms	321
13.9	Short Forms and Unmatched Segments	322
13.10	Chance Similarities	322
13.11	Sound–Meaning Isomorphism	323
13.12	Only Linguistic Evidence	323
13.13	Erroneous Morphological Analysis	323
13.14	Non-cognates	324
13.15	Spurious Forms	325
13.16	Methodological Wrap-up	326
14	Philology: The Role of Written Records	327
14.1	Introduction	327
14.2	Philology	327
14.3	Examples of What Philology Can Contribute	328
14.4	The Role of Writing	333
14.5	Getting Historical Linguistic Information for Written Sources	335
15	Linguistic Prehistory	339
15.1	Introduction	339
15.2	Indo-European Linguistic Prehistory	340
15.3	The Methods of Linguistic Prehistory	345
15.4	Limitations and Cautions	371
	<i>Bibliography</i>	374
	<i>Language Index</i>	386
	<i>Name Index</i>	391
	<i>Subject Index</i>	393

List of Tables

<i>Table 2.1</i>	Sanskrit–Latin cognates showing Sanskrit merger of <i>e, o, a > a</i>	21
<i>Table 2.2</i>	Historical derivation of ‘mouse’, ‘mice’, ‘foot’, ‘feet’	23
<i>Table 2.3</i>	Grassmann’s Law and its interaction with other Greek changes	30
<i>Table 2.4</i>	Grimm’s Law in English, Spanish and French comparisons	47
<i>Table 4.1</i>	Latin rhotacism and the interaction of analogy with sound change	96
<i>Table 5.1</i>	Some Romance cognate sets	111
<i>Table 5.2</i>	Kaqchikel–English comparisons	114
<i>Table 5.3</i>	Some additional Romance cognate sets	122
<i>Table 5.4</i>	Further Romance cognate sets	124
<i>Table 5.5</i>	Some Mayan cognate sets	125
<i>Table 5.6</i>	Central Algonquian sound correspondences and Bloomfield’s reconstruction	127
<i>Table 5.7</i>	Nootkan correspondences involving nasals	130
<i>Table 5.8</i>	Some Finnish–Hungarian cognate sets	133
<i>Table 5.9</i>	Indo-European cognates reflecting Grimm’s Law	137
<i>Table 5.10</i>	Exceptions to Grimm’s Law in consonant clusters	141
<i>Table 5.11</i>	Examples illustrating Verner’s Law	143
<i>Table 5.12</i>	Examples contrasting the effects of Grimm’s Law and Verner’s Law on medial consonants	144
<i>Table 5.13</i>	Verner’s Law in grammatical alternations	145

List of Tables

<i>Table 6.1</i>	Distribution of language families in the world	163
<i>Table 6.2</i>	Some of the better-known language families	164
<i>Table 6.3</i>	Some Nootkan sound correspondences	175
<i>Table 8.1</i>	Internal reconstruction and derivation of Nahuatl roots with initial <i>i</i>	205
<i>Table 8.2</i>	Internal reconstruction and derivation of 'long' and 'strong'	206
<i>Table 8.3</i>	Hypothetical but inaccurate reconstruction and derivation of 'long' and 'strong'	206
<i>Table 8.4</i>	Spanish internal reconstruction	207
<i>Table 8.5</i>	Derivation showing Spanish relative chronology	208
<i>Table 8.6</i>	Hypothetical derivation of Spanish with the wrong relative chronology	209
<i>Table 8.7</i>	Derivation showing loss of intervocalic <i>s</i> in Classical Greek	210
<i>Table 8.8</i>	Derivation showing <i>t</i> to <i>s</i> before <i>i</i> in Classical Greek	210
<i>Table 8.9</i>	Hypothetical derivation showing wrong chronological order in Classical Greek	211
<i>Table 8.10</i>	Derivation showing the correct chronological order in Classical Greek	211
<i>Table 8.11</i>	Derivation for Hypothesis I for Classical Greek 'vein'	212
<i>Table 8.12</i>	Derivation for Hypothesis II for Classical Greek 'vein'	213
<i>Table 8.13</i>	Derivation of *ait ^h íop- 'Ethiopian' in Hypothesis II	213
<i>Table 8.14</i>	Internal reconstruction of Classical Greek 'nominative singular' forms	215
<i>Table 8.15</i>	Historical derivation of 'mouse', 'mice', 'goose', 'geese'	217
<i>Table 8.16</i>	Comparison of Balto-Finnic 'leg' forms after internal reconstruction	219
<i>Table 8.17</i>	Comparison of Balto-Finnic 'leg' forms before internal reconstruction	219
<i>Table 9.1</i>	Pre-Nahuatl phonological derivations	235
<i>Table 9.2</i>	Balto-Finnic comparative verbal morphology	247
<i>Table 9.3</i>	Comparison of Balto-Finnic 'with' forms	248
<i>Table 9.4</i>	Comparison of Romance word orders with adjective and noun	249

List of Tables

<i>Table 11.1</i>	Estonian verb forms after certain sound changes	289
<i>Table 12.1</i>	Nootkan sound correspondences	308
<i>Table 13.1</i>	Forms of the verb 'to be' in some Indo-European languages	318
<i>Table 14.1</i>	Contrastive <i>h</i> and <i>x</i> in Classical Yucatec Maya	329
<i>Table 14.2</i>	The origin of Huastec labialised velars	330

List of Figures and Maps

<i>Figure 2.1</i>	The Great Vowel Shift in English	48
<i>Figure 5.1</i>	Proto-Romance family tree (and Spanish's genealogy)	110
<i>Figure 6.1</i>	The Indo-European family tree	168
<i>Figure 6.2</i>	The Uralic family tree	169
<i>Figure 6.3</i>	Mayan subgrouping	171
<i>Map 3.1</i>	Diffusion of palatalised velars in K'ichean languages	75
<i>Map 7.1</i>	Geographical distribution of words which retained /k/ in areas of Normandy	190
<i>Map 7.2</i>	Some major dialect areas in the USA	192
<i>Map 15.1</i>	The Finno-Ugric languages	346
<i>Map 15.2</i>	The Uto-Aztecan homeland	355
<i>Map 15.3</i>	Romani (Gypsy) migrations	364
<i>Map 15.4</i>	Distribution of place names of Scandinavian origin in England	369

Preface

A number of historical linguistics textbooks exist, but this one is different. Most others talk *about* historical linguistics; they may illustrate concepts and describe methods, and perhaps discuss theoretical issues, but they do not focus on how *to do* historical linguistics. A major goal of this book is to present an accessible, hands-on introduction to historical linguistics which does not just talk about the topics, but shows how to apply the procedures, how to think about the issues and, in general, how to do what historical linguists do. To this end, this text contains abundant examples and exercises to which students can apply the principles and procedures in order to learn for themselves how to 'do' historical linguistics. This text differs also by integrating topics now generally considered important to the field but which are often lacking in most other historical linguistics textbooks; these include syntactic change, grammaticalisation, sociolinguistic contributions to linguistic change, distant genetic relationships (how to show that languages are related), areal linguistics and linguistic prehistory. Also, the range of examples is greater and the number of languages from which examples are presented is much broader. Many examples are selected from the history of English, French, German and Spanish to make the concepts which they illustrate more accessible, since these are languages with which more students have some acquaintance, but examples from many non-Indo-European languages are also presented; these show the depth and richness of the various concepts and methods, and sometimes provide clearer cases than those available in the better-known Indo-European languages. In short, this text differs in its emphasis on accessibility, its 'how-to' orientation, its range of languages and examples, and its inclusion of certain essential but neglected topics.

Preface

This book is intended as an introductory textbook for historical linguistics courses, and assumes only that readers will have had an introduction to linguistics. It is hoped that linguists in general and others interested in language-related matters will also find things of interest to them in this book, though it is primarily intended for students of historical linguistics who have little background.

Historical linguistic practice today is linked with theories of general linguistics, particularly with regard to attempts to explain 'why' language changes. In this book, an attempt is made to keep to a minimum the complications for understanding and applying historical linguistics that diverse current theories often occasion. At the same time, however, basic linguistic terminology is employed with little explanation. Readers who have had some prior introduction to linguistics will fare better; in particular, some familiarity with phonetic symbols may be useful. (The symbols of the International Phonetic Alphabet are used in this text; see Chart 1 for a list of these and other symbols utilised in this book.) However, even without getting bogged down in theoretical details, phonetic notation or the mass of general linguistic terms utilised in talking about language, one can understand much of historical linguistics. For more detail on the topics covered here, the references cited throughout the book and the sources given in the general bibliography at the end, which contains references to most of the general works on historical linguistics, can be consulted.

Readers will perhaps notice a recurring struggle in the text. I believe it is important for students to have some sense of the general thinking concerning the various topics discussed, and to this end I occasionally mention how matters are typically presented in other textbooks or how they are generally seen by practising historical linguists. At the same time, I personally do not necessarily accept everything that is talked about and so feel some obligation to argue for what (I hope) is a better understanding of some topics. In such instances, I have attempted to present a reasonably unbiased account of opposing opinions. It is important for students to understand how historical linguists think and the sorts of arguments and evidence that would be necessary to resolve such issues. Ultimately, most of these involve areas where the differences of opinion can be decided only on the basis of substantive evidence which is not currently available but is hoped for from future research. Seeing the various sides of these issues should provide a basis for students to reach their own conclusions when the evidence becomes available, although it is not appropriate or possible in an introductory text to go into intricate detail concerning controversies and unresolved issues of the field.

Preface

A second struggle concerns the question of how to present complex notions. Definition and description without examples is usually not clear, but examples with no prior understanding of the concepts involved are also not clear. So, what should be presented first, contextless definitions or contextless examples? I have chosen to present first the concepts and then the examples to illustrate them. In several cases in the text, it will prove most valuable for clarity's sake to read the definitions, description and discussion, then the examples, and then to reread the general description and discussion – this may be true of anything, but is especially relevant in some contexts here.

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I thank Kevin Cowan, cartographer of the Department of Geography, Australian National University, for making the maps. Finally, I thank R. M. W. Dixon and the Research Centre for Typological Linguistics for financial support for the maps and especially for time during a fellowship at the Centre to finish the last portion of the book.

Also, two basic references have been employed extensively in checking forms used in examples in this book. For the Indo-European forms cited, I have relied on Calvert Watkins' *The American Heritage Dictionary of Indo-European Roots* (1985). For the history of words in English, I have used the *Oxford English Dictionary* (Oxford University Press, 1971) very extensively.

Phonetic Symbols and Conventions

The conventions for presenting examples used in this book are widely utilised in linguistics, but it will be helpful to state the more important of these for any readers unfamiliar with them.

Most linguistic examples are given in italics and their glosses (translations into English) are presented in single quotes, for example: Finnish *rengas* 'ring'.

In instances where it is necessary to make the phonetic form clear, the phonetic representation is presented in square brackets ([]), for example: [sɪŋ] 'sing'. In instances where it is relevant to specify the phonemic representation, this is given between slashed lines (/ /), for example: German *Bett* /bet/ 'bed'.

Double slashes (//) are used for dictionary forms (or underlying representations).

The convention of angled brackets (< >) is utilised to show that the form is given just as it was written in the original source from which it is cited, for example: German <Bett> 'bed'.

A hyphen (-) is used to show the separation of morphemes in a word, as in *jump-ing* for English *jumping*. Occasionally, a plus sign (+) is used to show a morpheme boundary in a context where it is necessary to show more explicitly the pieces which some example is composed of.

It is standard practice to use an asterisk (*) to represent reconstructed forms, as for example Proto-Indo-European **pətér* 'father'.

A convention in this text (not a general one in linguistics) is the use of ✕ to represent ungrammatical or non-occurring forms. Outside of historical linguistics, an asterisk is used to indicate ungrammatical and non-occurring forms; but since in historical linguistic contexts an asterisk signals reconstructed forms, to avoid confusion ✕ is used for ungrammatical or non-occurring forms.

It is standard in historical linguistics to use > to mean 'changed into', for example: $*p > b$ (original p changed into b), and < to mean 'changed from, comes from', for example: $b < *p$ (b comes from original p).

To show an environment where something occurs, the notation of / __ is utilised, where __ indicates the location of the material that changes, much as in the idea of 'fill in the blank'. Thus, a change in which p became b between vowels is represented as: $p > b / V_V$. A change conditioned by something in the context before the segment which changes is represented as, for example, in: $k > \check{k} / _ i$ (meaning k became $\check{k}$ in the environment before i). A change conditioned by something in the environment after the segment which changes is represented as, for example, in: $k > \check{k} / i _$ (meaning k became $\check{k}$ in the environment after i). The symbol # means 'word boundary', so that / __ # means 'word-finally' and / # __ means 'word-initially'.

To avoid notational (and theoretical) complications, when whole classes of sounds change or when only a single phonetic feature of a sound or class of sounds changes, sometimes just individual phonetic attributes are mentioned, for example: $stops > voiced$, meaning 'all the stop consonants change by becoming voiced'. Distinctive feature notation and other theoretical apparatus are not used in this text in order to make the examples more accessible to readers who have less background.

Finally, there are traditions of scholarship in the study of different languages and language families which differ significantly from one another with respect to the phonetic notation that they use. For example, vowel length is represented by a 'macron' over the vowel in some (as for example, [ā]), as a colon (or raised dot) after the vowel in others (as [a:]), and as a repetition of the vowel in still others (as [aa]). In this book, for the presentation of some of the examples cited, some of these different notational conventions commonly used for the various languages involved have been kept, though in cases where difficulty of interpretation might result, forms are also given in IPA symbols.

Phonetic Symbols Chart

—

	<i>Bilabial</i>	<i>Labiodental</i>	<i>Dental</i>	<i>Alveolar</i>	<i>Palato-alveolar</i>	<i>Retroflex</i>	<i>Palatal</i>	<i>Velar</i>	<i>Uvular</i>	<i>Glottal</i>
Voiceless stops	p			t		ʈ		k	q	ʔ
Voiced stops	b			d				g	ɢ	
Voiceless affricates				ts	ʈʂ					
Voiced affricates				dz	ʤ					
Voiceless fricatives	ɸ	f	θ	s	ʃ	ʂ	ç	x	χ	h
Voiced fricatives	β	v	ð	z	ʒ	ʐ		ɣ	ʁ	
Nasals	m			n			ɲ	ŋ	ɴ	
Approximants	w			ɹ			j		ʀ	
Laterals				l						

	<i>Front</i>	<i>Central</i>	<i>Back</i>
<i>High</i>			
close (tense)	i y	ɨ ʉ	u
open (lax)	ɪ ʏ		ʊ
<i>Mid</i>			
close (tense)	e ø	ə	o
open (lax)	ɛ œ		ɔ
<i>Low</i>	æ	a	ɑ

Phonetic Symbols Chart

C ^h	aspirated consonant
ç	dental consonant
C'	glottalised consonant
C ^w	labialised consonant
C ^j	palatalised consonant
ʋ, ɕ	voiceless sound
ɬ	voiceless lateral affricate
ɭ	velarised or pharyngealised lateral approximant
ɮ	voiceless lateral approximant (sometimes symbolised as ɬ, technically a voiceless lateral fricative)
ɓ	voiced imploded bilabial stop
ɸ	voiceless apical alveolar fricative
ʂ	voiceless laminal retroflex fricative
ç	voiceless laminal retroflex affricate
ɕ	voiceless prepalatal affricate
r (or ɾ)	voiced alveolar trill
ɾ	voiced alveolar flap (tap)
ʀ	voiced uvular approximant or fricative
ʁ	voiced pharyngeal fricative
ħ	voiceless pharyngeal fricative
ħ	voiceless pharyngeal fricative (used in Arabic sources)
ɖ, ɗ, ɟ	pharyngealised consonants (as in Arabic)
ɨ	voiced high front semivowel (second vowel in some diphthongs, not the nucleus of the syllable)
ʙ	voiceless rounded labiovelar approximant or fricative (devoiced w)
Ṽ, Ț	nasalised vowel
V:, Ṽ	long vowel (vowel length)
C:	long consonant (geminate consonant)
ɲ, n ^j	palatalised alveolar nasal
ɣ	fronted velar fricative
ɳ	symbol for retroflex nasal used in Sanskrit sources
ɳ	palato-alveolar nasal (Sanskrit)
ʃ	voiceless palato-alveolar fricative (used in Sanskrit sources)
ɕ	voiceless prepalatal fricative (IPA ɕ)

Note that usually no distinction is made between [a] and [ɑ], and *a* is used to symbolise both.

Introduction

3e [ye] knowe ek [also] that in [the] fourme [form] of speche
 [speech] is chaunge [change],
 With-inne [within] a thousand 3eer [years], and wordes tho [then]
 That hadden [had] pris [value], now wonder [wonderfully]
 nyce [stupid] and straunge [strange, foreign]
 Us thenketh hem [we think them/they seem to us]; and 3et [yet] thei
 [they] spake [spoke] hem [them] so,
 And spedde [succeeded] as wel [well] in loue [love] as men now do.

(Geoffrey Chaucer [1340–1400],

Troilus and Criseyde, book II, lines 22–6)

1.1 Introduction

What is historical linguistics? Historical linguists study language change. If you were to ask practising historical linguists why they study change in language, they would give you lots of different reasons, but certainly included in their answers would be that it is fun, exciting and intellectually engaging, that it involves some of the hottest topics in linguistics, and that it has important contributions to make to linguistic theory and to the understanding of human nature. There are many reasons why historical linguists feel this way about their field. For one, a grasp of the ways in which languages can change provides the student with a much better understanding of language in general, of how languages work, how their pieces fit together, and in general what makes them tick. For another, historical linguistic methods have been looked to for models of rigour and excellence in other fields. Historical linguistic findings have been utilised to solve historical problems of concern to society which extend far beyond linguistics (see Chapter 15). Those

dedicated to the humanistic study of individual languages would find their fields much impoverished without the richness provided by historical insights into the development of these languages – just imagine the study of any area of non-modern literature in French, German, Italian, Spanish or other languages without insights into how these languages have changed. A very important reason why historical linguists study language change and are excited about their field is because historical linguistics contributes significantly to other sub-areas of linguistics and to linguistic theory. For example, human cognition and the human capacity for language learning are central research interests in linguistics, and historical linguistics contributes significantly to this goal. As we determine more accurately what can change and what cannot change in a language, and what the permitted versus impossible ways are in which languages can change, we contribute significantly to the understanding of universal grammar, language typology and human cognition in general – fundamental to understanding our very humanity.

More linguists list historical linguistics as one of their areas of specialisation (not necessarily their first or primary area of expertise) than any other subfield of linguistics (with the possible exception of sociolinguistics). That is, it is clear that there are many practising historical linguists, though this may seem to be in contrast to the perception one might get from a look at the lists of required courses in linguistics programmes, from the titles of papers at many professional linguistic conferences, and from the tables of contents of most linguistics journals; nevertheless, historical linguistics is a major, thriving area of linguistics, as well it should be, given the role it has played and continues to play in contributing towards the primary goals of linguistics in general.

1.1.1 What historical linguistics isn't

Let's begin by clearing away some possible misconceptions, by considering a few things that historical linguistics is *not* about, though sometimes some non-linguists think it is. Historical linguistics is not concerned with the *history of linguistics*, though historical linguistics has played an important role in the development of linguistics – being the main kind of linguistics practised in the nineteenth century – and indeed historical linguistic notions had a monumental impact in the humanities and social sciences, far beyond just linguistics. For example, the development of the comparative method (see Chapter 5) is heralded as one of the major intellectual achievements of the nineteenth century.

Another topic not generally considered to be properly part of historical

Introduction

linguistics is the ultimate *origin of human language* and how it may have evolved from non-human primate call systems, gestures, or whatever, to have the properties we now associate with human languages in general. Many hypotheses abound, but it is very difficult to gain solid footing in this area. Historical linguistic theory and methods are very relevant for research here, and can provide checks and balances in this field where speculation often far exceeds substantive findings, but this is not a primary concern of historical linguistics itself.

Finally, historical linguistics is also not about determining or preserving pure, 'correct' forms of language or attempting to prevent change. The popular attitude towards change in language is resoundingly negative. The changes are often seen as corruption, decay, degeneration, deterioration, as due to laziness or slovenliness, as a threat to education, morality and even to national security. We read laments in letters to newspapers stating that our language is being destroyed, deformed and reduced to an almost unrecognisable remnant of its former and rightful glory. These are of course not new sentiments, but laments like this are found throughout history. For example, even from Jakob and Wilhelm Grimm (1854: iii), of fairytale fame and founding figures in historical linguistics, we read:

The farther back in time one can climb, the more beautiful and more perfect he finds the form of language, [while] the closer he comes to its present form, the more painful it is to him to find the power and adroitness of the language in decline and decay.

The complaint has even spawned poetry:

Coin brassy words at will, debase the coinage;
We're in an if-you-cannot-lick-them-join age,
A slovenliness provides its own excuse age,
Where usage overnight condones misuseage,
Farewell, farewell to my beloved language,
Once English, now a vile orangutanguage.

(Ogden Nash,

Laments for a Dying Language, 1962)

However, change in language is inevitable, and this makes complaints against language change both futile and silly. All languages change all the time (except dead ones). Language change is just a fact of life; it cannot be prevented or avoided. All the worries and fears notwithstanding, life always goes on with no obvious ill-effects in spite of linguistic change. Indeed, the changes going on today which so distress some in

our society are exactly the same in kind and character as many past changes about which there was much complaint and worry as they were taking place but the results of which today are considered enriching aspects of the modern language. The beauty (or lack thereof) that comes from linguistic change may be in the eye (better said, in the ear) of the beholder, but language change is not really good or bad; mostly it just is. Since it is always taking place, those who oppose ongoing changes would do their stress-levels well just to make peace with the inevitability of language change. Of course, society can assign negative or positive value to things in language (be they new changing ones or old ones), and this can have an impact on how or whether these things change. This sociolinguistic conditioning of change is an important part of historical linguistics (see Chapters 7 and 11).

1.2 What is Historical Linguistics About?

As already mentioned, historical linguistics deals with language change. Historical linguistics is sometimes called *diachronic* linguistics (from Greek *dia-* ‘through’ + *chronos* ‘time’ + *-ic*), since historical linguists are concerned with change in language or languages over time. This is contrasted with *synchronic* linguistics, which deals with a language at a single point in time; for example, linguists may attempt to write a grammar of present-day English as spoken in some particular speech community, and that would be a synchronic grammar. Similarly, a grammar written of Old English intended to represent a single point in time would also be a synchronic grammar. There are various ways to study language *diachronically*. For example, historical linguists may study changes in the history of a single language, for instance the changes from Old English to Modern English, or between Old French and Modern French, to mention just two examples. Modern English is very different from Old English, as is Modern French from Old French. Often the study of the history of a single language is called *philology*, for example English philology, French philology, Hispanic philology and so on. (The term *philology* has several other senses as well; see Chapter 14.)

The historical linguist may also study changes revealed in the comparison of related languages, often called *comparative* linguistics. We say that languages are related to one another when they descend from (are derived from) a single original language, a common ancestor: for example, the modern Romance languages (which include Italian, French, Spanish, Portuguese and others) descend from earlier Latin (see Chapters 5 and 6).

In the past, many had thought that the principal domain of historical linguistics was the study of 'how' languages change, believing that answers to the question of 'why' they change were too inaccessible. However, since the 1960s or so, great strides have been achieved also in understanding 'why' languages change (see Chapter 11). Today, we can say that historical linguistics is dedicated to the study of 'how' and 'why' languages change, both to the methods of investigating linguistic change and to the theories designed to explain these changes.

Some people imagine that historical linguists mostly just study the history of individual words – and many people are fascinated by word histories, as shown by the number of popular books, newspaper columns and radio broadcasts dedicated to the topic, more properly called *etymology* (derived from Greek *etumon* 'true' (neuter form), that is, 'true or original meaning of a word'). The primary goal of historical linguistics is *not* etymologies, but accurate etymology is an important product of historical linguistic work. Let us, for illustration's sake, consider a couple of examples and then see what the real role of etymology in historical linguistics is. Since word histories have a certain glamour about them for many people, let's check out the history of the word *glamour* itself. Surprisingly, it connects with a main concern of modern linguistics, namely *grammar*. (The example of *glamour* is also considered in Hock and Joseph 1996 and by Pinker 1994.)

Glamour is a changed form of the word *grammar*, originally in use in Scots English; it meant 'magic, enchantment, spell', found especially in the phrase 'to cast the glamour over one'. It did not acquire its sense of 'a magical or fictitious beauty or alluring charm' until the mid-1800s. *Grammar* has its own interesting history. It was borrowed from Old French *grammaire*, itself from Latin *grammatica*, ultimately derived from Greek *gramma* 'letter, written mark'. In Classical Latin, *grammatica* meant the methodical study of literature broadly. In the Middle Ages, it came to mean chiefly the study of or knowledge of Latin and hence came also to be synonymous with learning in general, the knowledge peculiar to the learned class. Since this was popularly believed to include also magic and astrology, French *grammaire* came to be used sometimes for the name of these occult 'sciences'. It is in this sense that it survived in *glamour*, and also in English *gramarye*, as well as in French *grimoire* 'conjuring book, unintelligible book or writing'. English *gramarye*, *grammar* means 'grammar, learning in general, occult learning, magic, necromancy', a word revived in literary usage by later writers; it is clearly archaic and related to the cases of vocabulary loss discussed in Chapter 10.

What is of greater concern to historical linguists is not the etymology

of these words per se, but the kinds of changes they have undergone and the techniques or methods we have at our disposal to recover this history. Thus, in the history of the words *glamour* and *grammar* we notice various kinds of change: borrowing from Greek to Latin and ultimately from French (a descendant of Latin) to English, shifts in meaning, and the sporadic change in sound (*r* to *l*) in the derived word *glamour*. Changes of this sort are what historical linguistics is about, not just the individual word histories. These kinds of changes that languages can and do undergo and the techniques that have been developed in historical linguistics to recover them are what the chapters of this book are concerned with.

Let's take *goodbye* as a second example. This everyday word has undergone several changes in its history. It began life in the late 1500s as *god be with you* (or *ye*), spelled variously as *god be wy ye*, *god b'uy*, and so on. The first part changed to *good* either on analogy with such other greetings as *good day*, *good morning* and *good night*, or as a euphemistic deformation to avoid the blasphemy of saying *god* (taboo avoidance) – or due to a combination of the two. The various independent words in *god be with you* were amalgamated into one, *goodbye*, and ultimately even this was shortened (clipped) to *bye*.

In large part, then, a word's etymology is the history of the linguistic changes it has undergone. Therefore, when we understand the various kinds of linguistic change dealt with in the chapters of this book, the stuff that etymologies are made of and based on becomes clear. Historical linguists are concerned with all these things broadly and not merely with the history behind individual words. For that reason, etymology is not the primary purpose of historical linguistics, but rather the goal is to understand language change in general; and when we understand this, then etymology, one area of historical linguistics, is a by-product of that understanding. For an explanation of the notions of borrowing, analogy, amalgamation, clipping and sound change mentioned in these examples, see Chapters 2, 3, 4 and 10.

1.3 Kinds of Linguistic Changes: An English Example

As seen in these sample etymologies, there are many kinds of linguistic change. A glance at the chapter titles of this book reveals the major ones. In effect, any aspect of a language's structure can change, and therefore we are concerned with learning to apply accurately the techniques that have been developed for dealing with these kinds of changes, with sound change, grammatical change, semantic change, borrowing,

analogy and so on, and with understanding and evaluating the basic assumptions upon which these historical linguistic methods are based.

We can begin to get an appreciation for the various sorts of changes that are possible in language by comparing a small sample from various stages of English. This exercise compares *Matthew 27:73* from translations of the Bible at different time periods, starting with the present and working back to Old English. This particular example was selected in part because it talks about language and in part because in translations of the Bible we have comparable texts from the various time periods which can reveal changes that have taken place:

1. Modern English (*The New English Bible*, 1961):
Shortly afterwards the bystanders came up and said to Peter, 'Surely you are another of them; your accent gives you away!'
2. Early Modern English (*The King James Bible*, 1611):
And after a while came vnto him they that stood by, and saide to Peter, Surely thou also art one of them, for thy speech bewrayeth thee.
3. Middle English (*The Wycliff Bible*, fourteenth century):
And a litil aftir, thei that stooden camen, and seiden to Petir, treuli thou art of hem; for thi speche makith thee knowun.
4. Old English (*The West-Saxon Gospels*, c. 1050):
þa æfter lytlum fyrste genēalæton þa ðe þær stodon, cwædon to petre. Soðlice þu eart of hym, þyn spræc þe gesweotolað.
[Literally: then after little first approached they that there stood, said to Peter. Truly thou art of them, thy speech thee makes clear.]

In comparing the Modern English with the Early Modern English (1476–1700) versions, we note several kinds of changes. (1) *Lexical*: in Early Modern English *bewrayeth* we have an example of lexical replacement. This word was archaic already in the seventeenth century and has been replaced by other words. It meant 'to malign, speak evil of, to expose (a deception)'. In this context, it means that Peter's way of speaking, his accent, gives him away. (2) *Grammatical* (syntactic and morphological) change: from *came vnto* [unto] *him they* to the Modern English equivalent, *they came to him*, there has been a syntactic change. In earlier times, English, like other Germanic languages, had a rule which essentially inverted the subject and verb when preceded by other material (though this rule was not obligatory in English as it is in German), so that because *and after a while* comes first in the sentence, *they came* is inverted to *came they*. This rule has for the most part been lost in Modern English. Another grammatical change (syntactic and

Historical Linguistics: An Introduction

morphological) is seen in the difference between *thou . . . art* and *you are*. Formerly, *thou* was 'you (singular familiar)' and contrasted with *ye/you* 'you (plural or singular formal)', but this distinction was lost. The *-eth* of *bewrayeth* was the 'third person singular' verb agreement suffix; it was replaced in time by *-(e)s* (*giveth* > *gives*). (3) *Sound change*: early Modern English was not pronounced in exactly the same way as Modern English, but it will be easier to show examples of sound changes in the later texts (below). (4) *Borrowing*: the word *accent* in Modern English is a loanword from Old French *accent* 'accent, pronunciation' (see Chapter 3 on borrowing). (5) *Changes in orthography* (spelling conventions): while mostly differences in orthography (spelling conventions) are not of central concern in historical linguistics, we do have to be able to interpret what the texts represent phonetically in order to utilise them successfully (this is part of philology; see Chapter 14). In *vnto* for modern *unto* we see a minor change in orthographic convention. Earlier in many European languages, there was in effect no distinction between the letters *v* and *u* (the Latin alphabet, upon which most European writing systems are based, had no such difference); both could be used to represent either the vowel /u/ or the consonant /v/ or in other cases /w/, though for both /v/ and /u/ usually *v* was used initially (<*vnder*> 'under') and *u* medially (<*haue*> 'have'). One could tell whether the vowel or consonant value was intended only in context – a *v* between consonants, for example, would most likely represent /u/. More revealing examples of changes in orthography are seen (below) in the Old English text. In *thou* (formerly pronounced /θu:/) we see the influence of the French scribes – French had a monumental influence on English after the Norman French conquest of England in 1066. The *ou* was the French way of spelling /u/, as in French *nous* /nu/ 'we'; later, English underwent the Great Vowel Shift (a sound change, mentioned below) in which /u:/ became /au/, which explains why words such as *thou*, *house* and *loud* (formerly /θu:/, /hu:s/ and /lu:d/ respectively) no longer have the sound /u:/ that the French orthographic *ou* originally represented.

Examples of kinds of changes seen in the comparison of the Middle English (1066–1476) text with later versions include, among others, (1) *Sound change*: final *-n* was lost by regular sound change under certain conditions (for example, not in past participles, such as *written*), as seen in the comparison of Middle English *stooden*, *camen* and *seiden* with their modern equivalents *stood*, *came* and *said*. (2) *Grammatical change* (morphological and syntactic): the forms *stooden*, *camen* and *seiden* ('stood', 'came' and 'said') each contain the final *-n* which marked

Introduction

agreement with the third person plural subject ('they', spelled *thei*). When final *-n* was lost by sound change, the grammatical change was brought about that verbs no longer had this agreement marker (*-n*) for the plural persons. (3) *Borrowing*: the *hem* is the original third person plural object pronoun, which was replaced by *them*, a borrowing from Scandinavian, which had great influence on English.

Between Old English (c. 450–1066) and Modern English we see many changes. Some of the kinds represented in this text include (1) *Lexical change*: there are instances of loss of vocabulary items represented by the words in this short verse, namely *genēalǣton* 'approached', *cwædon* 'said' (compare archaic *quoth*), *soðlice* 'truly' (*soothly*, compare *soothsayer* 'one who speaks the truth') and *gesweotolað* 'shows, reveals'. (2) *Sound change*: English has undergone many changes in pronunciation since Old English times. For example, the loss of final *-n* in certain circumstances mentioned above is also illustrated in *þyn* 'thy' (modern 'your') (in *þyn spræc* 'thy speech' [modern 'your accent']). A sporadic change is seen in the loss of *r* from *spræc* 'speech' (compare German *Sprache* 'language, speech', where the *r* is retained). English vowels underwent a number of changes. One is called the Great Vowel Shift (mentioned above), in which essentially long vowels raised (and long high vowels /i:/ and /u:/ became diphthongs, /ai/ and /au/, respectively). This is seen in the comparison of some of the Old English words with their Modern English equivalents:

Soðlice /so:θ-/	soothly /suθ-/ ('soothly, truly')
pu /θu:/	thou /ðau/
þyn /θi:n/	thy /ðai/
pe /θe:/	thee /ði/

(3) *Grammatical*: the change mentioned above, the loss of the subject–verb inversion when other material preceded in the clause, is seen in a comparison of *genēalǣton þa* 'approached they' with the modern counterpart for 'they approached'. The loss of case endings is seen in *æfter lytlum*, where the *-um* 'dative plural' is lost and no longer required after prepositions such as *after*. The same change which was already mentioned above in the Middle English text is seen again in the loss of the *-n* 'third person plural' verbal agreement marker, in *genēalǣton* '(they) approached', *stodon* '(they) stood' and *cwædon* '(they) said'. Another change is the loss of the prefix *ge-* of *genēalǣton* 'approached' and *gesweotolað* 'shows'. This was reduced in time from [je] to [j] to [i] and finally lost, so that many perfect forms ('has done', 'had done') were no longer distinct from the simple past ('did'); that is, in the case

of *sing/sang/have sung*, these remain distinct, but in the case of *bring/brought/have brought* they are not distinct, though formerly the *have brought* form would have borne the *ge-* prefix, distinguishing it from the *brought* ('past') without the prefix, which is now lost from the language. (4) *Orthographic*: there are many differences in how sounds are represented. Old English *þ* 'thorn' and *ð* 'eth' have been dropped and are spelled today with *th* for both the voiceless (*θ*) and voiced (*ð*) dental fricatives. The *æ* (called 'ash', from Old English *æsc*, its name in the runic alphabet) is also no longer used.

The various sorts of changes illustrated in this short text are the subject matter of the chapters of this book.

1.4 Exercises

Exercise 1.1

This exercise is about attitudes towards language change.

1. Try to find letters to newspapers or columns in newspapers or magazines which express opinions on the quality of English in use today and changes that are taking place. What do you think they reveal about attitudes towards language change?
2. Ask your friends, family and associates what they think about language today; do they think it is changing, and if so, is it getting better or worse?
3. Find books or articles on 'proper' English (prescriptive grammar); do they reveal any attitude towards changes that are going on in today's language?
4. Consider the many things that schoolteachers or school grammar books warn you against as being 'wrong' or 'bad grammar'. Do any of these involve changes in the language?
5. Compare books on etiquette written recently with some written thirty years ago or more; find the sections which deal with appropriate ways of speaking and use of the language. What changes have taken place in the recommendations made then and now? Do these reveal anything about change in the language or in language use?

Exercise 1.2

Observe the language you hear about you, and think about any changes that are going on now or have taken place in your lifetime. For example, if you are old enough, you might observe that *gay* has changed its basic

Introduction

meaning: today it mostly means 'homosexual' although until recently it did not have this meaning, but rather meant only 'happy, cheerful'. Slang changes at a rather fast rate; what observations might you make about recent slang versus earlier slang? Can you find examples of ongoing change in other areas of the language besides just vocabulary?

Exercise 1.3

Changes in spelling and occasional misspellings have been used to make inferences about changes in pronunciation. This can, of course, be misleading, since spelling conventions are sometimes used for other purposes than just to represent pronunciation. Try to find examples of recent differences in spelling or of misspellings and then try to imagine what they might mean, say, to future linguists looking back trying to determine what changed and when it changed. For example, you might compare the spelling *lite* with *light*, *gonna* with *going to*, *wannabee* with *want to be*. In particular, variations in spellings can be very revealing; see if you can find examples which may suggest something about language change.

Exercise 1.4

A number of examples from Shakespeare's plays, written in the Early Modern English period, are presented here which illustrate differences from how the same thing would be said today. Think about each example and attempt to state what changes have taken place in the language that would account for the differences you see in the constructions mentioned in the headings, the negatives, auxiliary verbs and so on. For example, in the first one we see: *Saw you the weird sisters?* The modern English equivalent would be *Did you see the weird sisters?* Had the heading directed your attention to yes-no questions, you would attempt to state what change had taken place, from former *saw you* (with inversion from *you saw*) to the modern version which no longer involves inversion but requires a form of *do* (*did you see*) which was not utilised in Shakespeare's version.

Treatment of negatives:

1. Saw you the weird sisters? . . . Came they not by you? (*Macbeth* 4, 1)
2. I know thee not, old man: fall to thy prayers (*Henry V* 5, 5)
3. Let not thy mother lose her prayers, Hamlet: I pray thee, stay with us; go not to Wittenberg (*Hamlet* 1, 2)

Historical Linguistics: An Introduction

4. I love thee not, therefore pursue me not (*A Midsummer Night's Dream* II, 1, 188)
5. But yet you draw not iron (*A Midsummer Night's Dream* II, 1, 196)
6. Tempt not too much the hatred of my spirit (*A Midsummer Night's Dream* II, 1, 211)
7. And I am sick when I look not on you (*A Midsummer Night's Dream* II, 1, 213)
8. I will not budge for no man's pleasure (*Romeo and Juliet* 3, 1)
9. I cannot weep, nor answer have I none (*Othello* 4, 2)
10. I am not sorry neither (*Othello* 5, 2)

Treatment of auxiliary verbs:

1. Macduff is fled to England (*Macbeth* 4, 1) = 'has fled'
2. The king himself is rode to view their battle (*Henry V* 4, 3) = 'has ridden'
3. Thou told'st me they were stolen into this wood (*A Midsummer Night's Dream* II, 1, 191) = 'had stolen away/hidden'

Treatment of comparatives and superlatives:

1. She comes more nearer earth than she was wont (*Othello* 5, 2)
2. This was the most unkindest cut of all (*Julius Caesar* 3, 2)
3. What worser place can I beg in your love (*A Midsummer Night's Dream* II, 1, 208)

Difference in prepositions:

1. He is torn with a bear (*The Winter's Tale* 5, 2) = 'torn by a bear'
2. We are such stuff as dreams are made on (*The Tempest* 4, 1)
3. He which hath no stomach to this fight, let him depart (*Henry V*, 4, 3)

Differences in verb agreement inflections (endings on the verbs which agree with the subject):

1. The quality of mercy is not strain'd
It droppeth as the gentle rain from heaven
Upon the place beneath: it is twice blessed;
It blesseth him that gives and him that takes
(The Merchant of Venice 4, 1)
2. The one I'll slay, the other slayeth me
(A Midsummer Night's Dream II, 1, 190)

Exercise 1.5

The following is a sample text of Middle English, from Chaucer c. 1380. It is presented three lines at a time: the first is from Chaucer's text; the second is a word-by-word translation, with some of the relevant grammatical morphemes indicated; the third is a modern translation. Compare these lines and report the main changes you observe in morphology, syntax, semantics and lexical items. (Do not concern yourself with the changes in spelling or pronunciation.)

The Tale of Melibee, Geoffrey Chaucer (c. 1380)

Upon a day bifel that he for his desport is went into the feeldes
hym to playe.

on one day befell that he for his pleasure is gone to the fields
him to play.

'One day it happened that for his pleasure he went to the fields
to amuse himself.'

[NOTE: *is went* = Modern English 'has gone'; with verbs of motion
the auxiliary used was a form of the verb 'to be', where today it is
with 'to have']

His wif and eek his doghter hath he laft inwith his hous,
his wife and also his daughter has he left within his house,
'His wife and his daughter also he left inside his house,'

[NOTE: *wif* = 'wife, woman']

of which the dores wer-en faste y-shette.

of which the doors were-Plural fast Past.Participle-shut
'whose doors were shut fast.'

Thre of his old foos ha-n it espied, and setten laddres to the walles
of his hous,

three of his old foes have-Plural it spied, and set-Plural ladders to
the walls of his house,

'Three of his old enemies saw this, and set ladders to the walls of
the house,'

and by wyndowes ben entred, and betten his wyf,
and by windows had entered, and beaten his wife,
'and entered by the windows, and beat his wife,'

[NOTE: *ben entred* = 'have entered', a verb of motion taking 'to be' as
the auxiliary]

and wounded his doghter with fyve mortal woundes in fyve sondry
places –
and wounded his daughter with five mortal wounds in five sundry
places –
‘and wounded his daughter with five mortal wounds in five
different places –’

this is to sey-n, in hir feet, in hir handes, in hir erys, in hir nose,
and in hir mouth, –
this is to say-Infinitive, in her feet, in her hands, in her ears, in her
nose, and in her mouth, –
‘that is to say, in her feet, in her hands, in her ears, in her nose,
and in her mouth –’

and left-en hir for deed, and went-en away.
and left-Plural her for dead, and went-Plural away.
‘and left her for dead, and went away.’

(Lass 1992: 25–6)

Exercise 1.6

The text in this exercise is a sample of Early Modern English, from William Caxton, *Eneydos* (c. 1491). As in Exercise 1.5, three lines are presented: the first is from Caxton’s text; the second is a word-by-word translation, with some of the relevant grammatical morphemes indicated; the third is a more colloquial modern translation. Compare the first two lines and report the main changes you observe in morphology, syntax, semantics and lexical items. (Again, do not concern yourself with the changes in spelling or pronunciation beyond the most obvious ones.)

And that commyn englysshe that is spoken in one shyre varyeth
from a nother. In so moche
and that common English that is spoken in one shire varies from
another. In so much
‘And the common English that is spoken in one county varies so
much from [that spoken in] another. In so much’

that in my days happened that certayn marchauntes were in a ship
in tamyse
that in my days happened that certain merchants were in a ship in
Thames
‘that in my time it happened that some merchants were in a ship on
the Thames’

Introduction

for to haue sayled ouer the see to zelande/ and for lacke of wynde
thei taryed atte forlond;
for to have sailed over the sea to Zeeland. And for lack of wind
they tarried at.the coast;
'to sail over the sea to Zeeland. And because there was no wind,
they stayed at the coast'

[NOTE: Zeeland = a province in the Netherlands]

and wente to land for to refreshe them And one of theym, named
sheffelde a mercer
and went to land for to refresh them. And one of them, named
Sheffield, a mercer,
'and they went on land to refresh themselves. And one of them,
named Sheffield, a fabric-dealer,'

cam in to an hows and axed [aksed] for mete, and specyally he
axyd after eggys.
came into a house and asked for meat, and especially he asked
after eggys.
'came into a house and asked for food, and specifically he asked
for "eggs".'

And the goode wyf answerede. that she coude no frenshe.
and the good woman answered that she could no French.
'And the good woman answered that she knew no French.'

And the marchaunt was angry. for he also coude speke no frenshe.
and the merchant was angry, for he also could speak no French,
'And the merchant was angry, because he couldn't speak any
French either.'

[NOTE: *coude* = 'was able to, knew (how to)']

but wolde haue hadde eggys/ and she vnderstode hym not/
but would have had eggs; and she understood him not.
'but he wanted to have eggs; and she did not understand him.'

[NOTE: *wolde* = 'wanted', the source of Modern English *would*]

And thenne at laste a nother sayd that he wolde haue eyren/
and then at last an other said that he would have eggs.
'and then finally somebody else said that he wanted to have eggs.'

then the good wyf said that she understod him wel/
then the good woman said that she understood him well.
'Then the good woman said that she understood him well.'

(Source of Caxton's text: Fisher and Bornstein 1974: 186-7)

2

Sound Change

From one point of view the sound shift seems to me to be a barbarous aberration from which other quieter nations refrained, but which has to do with the violent progress and yearning for liberty as found in Germany in the early Middle Ages, and which started the transformation of Europe.

(Jakob Grimm, 1848)

2.1 Introduction

Perhaps the most thoroughly studied area of historical linguistics is sound change. Over time, the sounds of languages tend to change. The study of sound change has yielded very significant results, and important assumptions that underlie historical linguistic methods, especially the comparative method, are based on these findings. An understanding of sound change is truly important for historical linguistics in general, and this needs to be stressed – it plays an extremely important role in the comparative method and hence also in linguistic reconstruction, in internal reconstruction, in detecting loanwords, and in determining whether languages are related to one another. These topics and the methods for dealing with them are the subject of later chapters. This chapter is about how sounds change.

Sound change is a major concern of historical linguistics; it is often the main feature of books on the history of individual languages. Typically, sound changes are classified, often in long lists of many different kinds of sound changes, each with its own traditional name (some with more than one name). To be at home with sound change, it is necessary to know the most frequently used of these names. The most commonly

recurring kinds of sound changes in the world's languages are listed and exemplified in this chapter. They are organised in a representative classification of sound changes, but there is nothing special about this particular arrangement, and different textbooks present a variety of other classifications.

2.2 Kinds of Sound Change

Sound changes are usually classified according to whether they are *regular* or *sporadic*. *Sporadic* changes affect only one or a few words, and do not apply generally throughout the language; that is, a change is considered sporadic if we cannot predict which words in a language it will affect. A couple of examples of sporadic changes were seen in Chapter 1: Modern English *speech* has lost the *r* of Old English *spræc* 'language, speech', but *r* is not generally lost in this context, as shown by the fact that *spring*, *sprig*, *spree* and so on retain the *r*. *Glamour* comes from *grammar* through the sporadic change of *r* to *l*, but this change is not found regularly in other words; *graft*, *grain*, *grasp* and so forth did not change their *r* to *l*.

Regular changes recur generally and take place uniformly wherever the phonetic circumstances in which the change happens are encountered. The regular sound changes are accorded far more attention in historical linguistics, and rightly so – they are extremely important to the methods and theories about language change. In fact, the most important basic assumption in historical linguistics is that sound change is regular, a fundamental principle with far-reaching implications for the methods that will be considered in later chapters. To say that a sound change is regular means that the change takes place whenever the sound or sounds which undergo the change are found in the circumstances or environments that condition the change. For example, original *p* regularly became *b* between vowels in Spanish ($p > b/V_V$); this means that in this context between vowels, every original *p* became a *b*; it is not the case that some original intervocalic *p*'s became *b* in some words, but became, say, *f* in some other words and *ø* in still other words, in unpredictable ways. If a sound could change in such arbitrary and unpredictable ways, the change would not be regular; but sound change is regular (though as we will see in other chapters, some other kinds of change can also affect sounds, so that the results are not so regular but are subject to other kinds of explanations).

This is called 'the *regularity principle*' or 'the *Neogrammarian hypothesis*'. The Neogrammarians, beginning in about 1876 in Germany,

became extremely influential in general thinking about language change, and about sound change in particular. The Neogrammarians were a group of younger scholars who antagonised the leaders of the field at that time by attacking older thinking and loudly proclaiming their own views. The early Neogrammarians included Karl Brugmann, Berthold Delbrück, August Leskien, Hermann Osthoff, Hermann Paul and others. They were called *Junggrammatiker* 'young grammarians' in German, where *jung*- 'young' had the sense of 'young Turks', originally intended as a humorous nickname for the rebellious circle of young scholars, although they adopted the term as their own name. English *Neogrammarian* is not a very precise translation. Their slogan was: *sound laws suffer no exceptions* (Osthoff and Brugmann 1878). The notion of the 'regularity of the sound laws' became fundamental to the comparative method (see Chapter 5). By 'sound laws' they meant merely 'sound changes', but they referred to them as 'laws' because they linked linguistics with the rigorous sciences which dealt in laws and law-like statements. We will return to the regularity principle in more detail in Chapter 5.

Sound changes are also typically classified according to whether they are *unconditioned* or *conditioned*. To understand these categories, it will be helpful to read the description of them here, then look at the examples, and then reread these definitions again. When a sound change occurs generally and is not dependent on the phonetic context in which it occurs, that is, not dependent on or restricted in any way by neighbouring sounds, it is *unconditioned*. Unconditioned sound changes modify the sound in all contexts in which it occurs, regardless of what other sounds may be found in words containing the changing sound: that is, the change happens irrespective of the phonological context in which the sound that changes may be found. When a change takes place only in certain contexts (when it is dependent upon neighbouring sounds, upon the sound's position within words, or on other aspects of the grammar), it is *conditioned*. Conditioned changes are more restricted and affect only some of the sound's occurrences, those in particular contexts, but not other occurrences which happen to be found in environments outside the restricted situations in which the change takes effect. For example, the Spanish change of *p* to *b* intervocalically (mentioned above) is conditioned; only those *p*'s which are between vowels become *b*, while *p*'s in other positions (for example, at the beginning of words) do not change. On the other hand, most varieties of Latin American Spanish have changed *ɫ* to *j* unconditionally – every instance of an original *ɫ* has changed to *j* regardless of the context in which the *ɫ* occurred.

The distinction between *phonemic* and *non-phonemic* changes is present in some fashion in most treatments of sound change. It has to do with the recognition of distinct levels of phonological analysis in linguistic theory – the phonetic level and the phonemic level. There is sometimes disagreement about how the second level is to be understood, that is, about how abstract phonemes may be (how different or distant they can be from the phonetic form) and how they are to be represented. Naturally, if there were full agreement in phonological theory about the ‘phonemic’ level, there would be more of a consensus in historical linguistics on how to talk about the aspects of sound change which relate to it. However, for our purposes, a definitive characterisation is not crucial, so long as we recognise that talk about sound change makes reference to two distinct levels. In general, it is helpful to think of phonetics as representing the actually occurring physical sounds, and of phonemes as representing the speakers’ knowledge or mental organisation of the sounds of their language. A non-phonemic change (also called *allophonic* change) does not alter the total number of phonemes in the language. Some call the non-phonemic changes *shifts*, referring to the shift in pronunciation (at the phonetic level), with no change in the number of distinctive sounds. A *phonemic* change is defined as one which does affect the inventory of phonemes (the basic sounds that native speakers hold to be distinct) by adding to or deleting from the number of phonemes/basic sounds of the language.

2.3 Non-phonemic (Allophonic) Changes

Non-phonemic changes have not been considered as important as phonemic changes (below), perhaps because they do not change the structural organisation of the inventory of sounds.

2.3.1 Non-phonemic unconditioned changes

(1) In varieties of English, $u > \text{ʊ}$ (central rounded vowel), and in some dialects even on to y , as in ‘shoe’ $[\text{ʃ}u] > [\text{ʃ}\text{ʊ}]$, and in some even $[\text{ʃ}y]$.

(2) Pipil (an Uto-Aztecan language of El Salvador): $o > u$. Proto-Nahua, Pipil’s immediate ancestor, had the vowel inventory $/i, e, a, o/$. When Pipil changed o to u , this did not change the number of distinctive vowels, and therefore it is a non-phonemic change. Since the change affected all instances of o , turning them all into u regardless of other sounds in the context, it is an unconditioned change.

(3) Guatemalan Spanish: $r > \text{ʃ}$. The ‘trilled’ r found in most Spanish dialects has become the so-called ‘assibilated’ r (phonetically a voiceless

laminal retroflex fricative) in rural Guatemalan Spanish. Since *r* becomes *ʃ* in all contexts, without restrictions which depend upon neighbouring sounds, this is an unconditioned change. In this change, one sound, *ʃ*, is substituted for another, for original *r*, but the number of distinctive sounds (phonemes) in the language is not changed; therefore, it is a non-phonemic change.

2.3.2 Non-phonemic conditioned changes

(1) Many English dialects have undergone a change in which a vowel is phonetically lengthened before voiced stops, for example, /bɛd/ > [bɛːd] 'bed'.

(2) Spanish dialects: *n* > *ɲ* / __ #. In many dialects of Spanish, final *n* has changed so that it is no longer pronounced as [n], but rather as a velar nasal [ɲ], as in *son* 'they are' [son] > [soɲ], *bien* 'well, very' [bjen] > [bjeɲ]. This is a conditioned change, since *n* did not change in all its occurrences, but only where it was at the end of words. It is non-phonemic, since the change results in no change at the phonemic level. Before the change, the phoneme /n/ had one phonetic form (allophone), [n]; after the change, /n/ came to have two non-contrastive variants (allophones), predictable from context, with [ɲ] word-finally and [n] when not in final position.

2.4 Phonemic Changes

Two principal kinds of phonemic changes are *mergers* and *splits*.

2.4.1 Merger (A, B > B, or A, B > C)

Mergers are changes in which, as the name suggests, two (or more) distinct sounds merge into one, leaving fewer distinct sounds (fewer phonemes) in the phonological inventory than there were before the change.

(1) Most varieties of Latin American Spanish: *lʲ*, *j* > *j*. Spanish used to contrast the two sounds *lʲ* (palatalised *l*) and *j*, and the contrast is still maintained in some dialects of Spain and in the Andes region of South America; however, in most of Latin America and in many dialects of Peninsular Spanish (as the Spanish of Spain is called), these two sounds have merged into one, to *j*, as in *calle* /kalʲe/ > /kaje/ 'street', *llamar* /lʲamar/ > /jamar/ 'to call'. As a consequence, for example, both *haya*

Sound Change

/aja/ 'have (subjunctive)' and *halla* 'find' /al^ja/ have merged to /aja/, resulting in the two words being homophonous.

(2) Latin American Spanish: $\theta, \varsigma > \mathfrak{s}$. Peninsular Spanish contrasts the two sounds, dental fricative θ and apical alveolar fricative ς , which merged to $\mathfrak{s}$ in Latin American and some Peninsular dialects. For example, *caza* /ka θ a/ 'hunt, chase' and *casa* /ka ς a/ 'house' are both /ka $\mathfrak{s}$ a/ throughout Latin America. This change illustrates the rarer kind of merger where the two original sounds merge into some third sound which was not formerly present in the language (symbolised above as A, B > C).

(3) Sanskrit: $e, o, a > a$ (in most contexts, the $o > a$ part is conditioned in some instances) ($e, o > a$; that is, e and o merging with existing a). Some words which illustrate this merger are seen in Table 2.1 where the Sanskrit examples (which have undergone the merger) are compared with Latin cognates (which preserve the original vowel); the original vowel before the Sanskrit change is also seen in the Proto-Indo-European forms listed, from which both the Sanskrit and Latin words derive.

TABLE 2.1: Sanskrit–Latin cognates showing Sanskrit merger of $e, o, a > a$

<i>Sanskrit</i>	<i>Latin</i>	<i>Proto-Indo-European</i>	
ad-	ed-	*ed-	'to eat'
danta	dent-	*dent-	'tooth'
avi-	ovi-	*owi-	'sheep'
dva-	duo	*dwo-	'two'
ajra-	ager	*agro-	'field' (compare <i>acre</i>)
apa	ab	*apo	'away, from'

(4) Proto-Indo-European (PIE) $*o, *ə, *a > \text{Proto-Germanic } *a$. Some examples which illustrate this change in Germanic but not in other branches of Indo-European are as follows (only the first syllable is relevant here).

	<i>PIE</i>	<i>Greek</i>	<i>Latin</i>	<i>Gothic</i>	<i>OHG</i>	<i>English</i>
*o	*oktō(u)-	oktō	octo	ahtau [axtau]	ahto	'eight'
*ə	*pāter-	patēr	pater	fadar	fater	'father'
*a	*agro-	agrós	ager	akrs	ackar	'field' (acre)

(5) Proto-Indo-European (PIE) **ō*, **ā* > Proto-Germanic **ō*. For example: PIE **plō-tu-* > Proto-Germanic **flōduz* 'flowing water, deluge' (Old English *flōd* 'flood'); PIE **bhrāter-* > Proto-Germanic **brōthar-* 'brother' (Old English *brōþor* 'brother'; compare Sanskrit *bhrātar*, Latin *frāter*).

An important axiom concerning mergers is: *mergers are irreversible*. This means that when sounds have completely merged, a subsequent change, say some generations later, will not be able to restore the original distinctions. Thus, for example, in the Sanskrit case in paragraph (3) above, after the merger, children would learn all the words in Table 2.1 with the vowel *a*, and there would be no basis left in the language for determining which of these words with *a* may have originally had *e*, or which had *o* which became *a*, or which had retained original *a* unchanged. A language learner arriving upon the scene long after the merger was completed would find no evidence in these words which would permit him or her successfully to change the vowel back to *e* where it had once been an *e* in *danta* 'tooth', and not to *e* but rather back to *o* in *dva-* 'two'.

2.4.2 Split (A > B, C)

To comprehend splits, we need to understand another axiom: *splits follow mergers*. That is, in splits, the sounds in question do not themselves change in any physical way, but phonetically they stay as they were; rather it is the merger of other sounds in their environment which causes the phonemic status of the sounds involved in the splits to change from being predictable conditioned variants of sounds (allophonic) to unpredictable, contrastive, distinctive sounds (phonemic). This is illustrated well by the history of 'umlaut' in English.

(1) Split in English connected with umlaut. 'Umlaut' is a kind of sound change in which a back vowel is fronted when followed by a front vowel (or *j*) (usually in the next syllable). Umlaut initially created front-vowel allophones of back vowels, which became phonemic when the final front vowel of the umlaut environment was lost. Note that for the purposes of splits and mergers, loss is considered to be merger with 'zero'. We'll trace this in stages to see the developments and the split as a consequence of the merger.

STAGE 1 (Proto-Germanic), just phonemic /u/ and /o/, each with only one variant (allophone):

**mūs-* 'mouse', **mūs-iz* 'mice'; **fōt-* 'foot', **fōt-iz* 'feet'

Sound Change

STAGE 2 (umlaut), /u/ and /o/ develop allophones, [ȳ] and [ō], respectively, before following /i, j/:

mūs-i > *mȳsi* 'mice'; *fōt* > *fōti* 'feet'; *mūs-* 'mouse', *fōt-* 'foot'

STAGE 3 (loss of final *i*):

mȳsi > *mȳs* 'mice'; *fōti* > *fōt* 'feet'; *mūs-* 'mouse', *fōt-* 'foot'

At this stage, since the final *-i* which had conditioned the variants (allophones) was no longer present, but had been lost (merged with 'zero'), the result was that *ū* contrasted with *ȳ* and *ō* contrasted with *ō̄*, all four now as distinct phonemes. At this stage, we see the split as a consequence of the merger, but let's complete the story. Next, the front rounded vowels lost their rounding (*ȳ* > *ī*; *ō̄* > *ē*), an unconditioned change in which the rounded front vowels merged with their unrounded counterparts: *mȳs* > *mīs* 'mice'; *fōt* > *fēt* 'feet'. Finally, these underwent the Great Vowel Shift, in which long vowels raised (for example, *ē* > *ī*) and long high vowels diphthongised (for example, *ī* > *ai*), with Modern English as a result: *mīs* > /maɪs/ 'mice' and *fēt* > /fi:t/ 'feet'. This series of changes is shown graphically in Table 2.2, where // represents the phonemic status of these forms, and [] shows the phonetic status.

TABLE 2.2: Historical derivation of 'mouse', 'mice', 'foot', 'feet'

	<i>mouse</i>	<i>mice</i>	<i>foot</i>	<i>feet</i>
Stage 1 (no changes)	/mu:s/	/mu:s-i/	/fo:t/	/fo:t-i/
	[mu:s]	[mu:s-i]	[fo:t]	[fo:t-i]
Umlaut	/mu:s/	/mu:s-i/	/fo:t/	/fo:t-i/
	[mu:s]	[my:s-i]	[fo:t]	[fō:t-i]
Loss of <i>-i</i>	/mu:s/	/my:s/	/fo:t/	/fō:t/
(= split after merger)	[mu:s]	[my:s]	[fo:t]	[fō:t]
Unrounding	/mu:s/	/mi:s/	/fo:t/	/fe:t/
	[mu:s]	[mi:s]	[fo:t]	[fe:t]
Great Vowel Shift	/maus/	/mais/	/fu:t/	/fi:t/

(2) Palatalisation in Russian. In Old Russian, palatalisation of consonants was predictable (allophonic), conditioned by a following front vowel, as in *krovĭ* [krovĭj] 'blood' in comparison with *krovŭ* [krovŭ] 'shelter'. Later, however, the short/lax final vowels *ĭ* and *ŭ* were lost (*ĭ*, *ŭ* > Ø / __#). Loss of a sound is generally considered to be equivalent to a merger with Ø ('zero'). So, *ĭ* and *ŭ* merged with Ø ('zero'), leaving /vĭ/ and /v/ in contrast and therefore as distinct phonemes, as

shown by new minimal pairs such as *krov^j* 'blood' and *krov* 'shelter' which come about as a result of the merger with $\emptyset$ (actually loss) of the final vowels, one of which (the front one) had originally conditioned the allophonic palatalisation so that the palatalised and non-palatalised versions of the sound were merely variants of a single basic sound (that is, they were allophones of the same phoneme). Thus, in this example, v^j and v split as a result of the merger with $\emptyset$ which affected these final vowels.

(3) English /n/ had the predictable (allophonic) variant [ŋ] which occurred only before *k* and *g*. Later, final *g* was lost in these forms ($g > \emptyset$ / η __#); that is, final *g* merged with $\emptyset$, leaving /n/ and /ŋ/ in contrast, since now both nasals came to occur at the end of words where formerly the *ŋ* had depended on the presence of the following *g* which is no longer there, as in /sɪn/ 'sin' and /sɪŋ/ 'sing' (from earlier [sɪŋg] before the *g* was lost). Thus /n/ split into /n/ and /ŋ/ when the merger of another sound (*g* with $\emptyset$ in this case) left the two in contrast.

(4) Split and merger in Nahuatl. The axiom that splits follow mergers is illustrated well by a merger in Nahuatl that caused the split which resulted in /ʃ/ contrasting phonemically with /s/. In Nahuatl (Uto-Aztec family), *s* originally had two variants (allophones), [ʃ] before *i* and [s] everywhere else, as in:

Phonemic: /sima/ 'to shave'	/sima/ 'to prepare plant leaves for extracting fibres'
Phonetic: [ʃima]	[sima]

Then Nahuatl underwent the merger, *i*, *i* > *i* (that is, *i* > *i*, resulting in former *i* being merged with *i*): *sima* > [sima] 'to prepare leaves...' ([ʃima] 'to shave' remained [ʃima]). However, as a result of the merger of *i* and *i*, the *s* and *ʃ* split into separate phonemes, since the different conditioning sounds in their environment (*i* and *i*) which had originally made them predictable variants (allophones) of the single original phoneme /s/ were no longer distinguished (both now *i*) and hence they could no longer serve as the basis for determining when the phoneme /s/ would be pronounced [ʃ] (formerly before *i*) and where it would be [s] (before former *i*). This left these sounds in contrast, thus changing their status from that of variants (allophones) of one distinctive sound (one phoneme, /s/) to being distinctive, contrastive sounds (separate phonemes, /s/ and /ʃ/):

/ʃima/ 'to shave'	/sima/ 'to prepare plant leaves for extracting fibres'
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In the case of the split, the two sounds, *f* and *s*, did not themselves change at all (phonetically); they were both present before the change and are still present in the same phonetic form after the change; however, they now contrast with one another and can serve to distinguish words of different meaning, and so their phonemic status has changed; they have, as a result of the merger, now split into separate phonemes.

2.4.3 Unconditioned phonemic changes

We have already seen several examples which fit this category; for example the merger of Spanish /l^j/ and /j/ to /j/ in most of Latin America was unconditioned – it happened in every environment in the language – and it resulted in fewer contrasting phonemes in the language. In South Island Māori, *ŋ* > *k* (that is, *ŋ*, *k* > *k*); that is, *ŋ* became *k* everywhere, with no limits on where, and the merger of *ŋ* with former *k* resulted in fewer contrastive sounds. Examples of this sort are quite common in languages of the world.

2.4.4 Conditioned phonemic changes

Examples are also abundant of changes in which a sound's phonemic status changes but only in certain circumstances. For example, the well-known 'ruki' rule of Sanskrit is a conditioned change in which original *s* becomes retroflex *ṣ* after the sounds *r*, *u*, *k*, and *i* or *j* (*s* > *ṣ* / *i*, *j*, *u*, *k*, *r*__), for example *agni*- 'fire'+ *-su* 'locative plural' > *agniṣu* 'among the fires'; *vāk* 'word' + *-su* > *vākṣu* 'among the words'. There is a version of this rule also in Avestan and Lithuanian in which *s* > *ṣ* and in Old Church Slavonic in which *s* > *x* in contexts similar to that of the Sanskrit rule.

2.5 General Kinds of Sound Changes

Ultimately, the two distinctions, conditioned/unconditioned and phonemic/non-phonemic, while generally present in the treatments of sound change, are often ignored in discussions of specific sound changes. If a change takes place in all environments, then it is clearly unconditioned whether this is pointed out directly or not; similarly, changes which are limited to particular phonetic contexts are obviously conditioned changes. As for phonemic versus non-phonemic changes, in a great many actual sound changes, it is possible to talk about how one sound changes into another without regard for the phonemic status of the sounds in question,

or better said, the resulting phonemic status is often clear even if not pointed out specifically. On the other hand, virtually all treatments present a classification (often just a list) of the kinds of sound changes most often encountered in the languages of the world. These are defined and exemplified in what follows, with some indication of which ones are more important and which terms are used less commonly. Historical linguists often do not bother with the more recondite of these.

2.5.1 Assimilation

Assimilation means that one sound becomes more similar to another, a change in a sound brought about by the influence of a neighbouring, usually adjacent, sound. Assimilatory changes are very common, probably the most frequent and most important category of sound changes. Assimilatory changes are classified in terms of the three intersecting dichotomies *total–partial*, *contact–distant* and *regressive–progressive*. A change is *total* assimilation if a sound becomes identical to another by taking on all of its phonetic features. The change is *partial* if the assimilating sound acquires some traits of another, but does not become fully identical to it. A *regressive* (*anticipatory*) change is one in which the sound that undergoes the change comes earlier in the word (nearer the beginning, more to the left) than the sound which causes or conditions the assimilation. *Progressive* changes affect sounds which come later in the word than (closer to the end than, to the right of) the conditioning environment. These three parameters of classification interact with one another to give the following combinations of named changes.

2.5.1.1 Total contact regressive assimilation

(1) Latin *octo* > Italian *otto* ‘eight’, *noctem* > *notte* ‘night’, *factum* > *fatto* ‘done’. The *k* (spelled *c*) is before/to the left of the *t* which conditions it to change; thus the change is *regressive*. The *k* is immediately adjacent to the *t*, meaning that this is a *contact* change. And, the *k* assumes all the features of the conditioning *t*, becoming itself a *t*, meaning that the assimilation is *total*. In *septem* > *sette* ‘seven’, *aptum* > *atto* ‘apt, fit for’, we see the same sort of assimilation but with *p*.

(2) Latin *somnus* > Italian *sonno* ‘sleep, dream’.

(3) In Caribbean dialects of Spanish, preconsonantal *s* typically becomes *h*, which frequently assimilates totally to the following consonant (in casual speech): *hasta* /*asta*/ > [ahta] > [atta] ‘until’; *mismo* > [mihmo] > [mimmo] ‘same’.

(4) Swedish $\eta k > kk$: **drinka* > *drikka* 'to drink' (compare English *drink*), **tanka* > *takka* 'to thank' (compare English *thank*) (where the spelling *nk* represents [ŋk]) (Wessén 1969: 39).

2.5.1.2 Total contact progressive assimilation

(1) Proto-Indo-European **kolnis* > Latin *collis* 'hill'. The *n* is after/to the right of the *l* which conditions the change; thus the change is *progressive*. The *n* is immediately adjacent to the *l*, thus a *contact* change. The *n* takes on all the features of *l* which conditions the change, a *total* assimilation. The same change is seen in Proto-Germanic **hulnis* (from Proto-Indo-European **kolnis*) > Old English *hyll* > Modern English *hill* 'hill', Old English *myln* > Modern English *mill* 'mill' (ultimately a loan in English from Vulgar Latin *mulina* 'mill'; compare French *moulin* and Spanish *molina* 'mill').

(2) In Finnish, an *n* assimilates totally to an *l*, *r*, or *s* in a preceding morpheme, as in *kuul-nut* > *kuullut* 'heard', *pur-nut* > *purrut* 'bitten', *nous-nut* > *noussut* 'risen' (-*nut* 'past participle').

2.5.1.3 Partial contact regressive assimilation

(1) Proto-Indo-European **swep-no-* > Latin *somnus* 'sleep'. This change is *partial* because *p* only takes on some of the features of the conditioning *n*, namely, it becomes more like the *n* by taking on its feature of nasality, becoming *m*. Because the *p* is next to the *n*, this is a *contact* change; it is *regressive* because the *p* is before the *n* which conditions the change.

(2) In Spanish (in the non-careful pronunciations of most dialects), *s* > *z*/__voiced C, as in: *mismo* > [mizmo] 'same', *desde* > [dezde] 'since'.

(3) The assimilation of nasals in point of articulation to that of following stops, extremely frequent in the world's languages, is illustrated in English by the changes in the morpheme /tɪn-/ 'not', as in *in-possible* > *impossible*; *in-tolerant* > *intolerant*; *in-compatible* > *incompatible* (in the last case, the change of *n* to *ŋ* is optional for many speakers).

2.5.1.4 Partial contact progressive assimilation

(1) The English suffixes spelled *-ed* formerly had a vowel, but after the change which eliminated the vowel, the *d* came to be adjacent to a preceding consonant, and it became voiceless if that preceding consonant was voiceless (and a non-alveolar stop), as in /wɔkt/ 'walked', /træpt/ 'trapped' (*d* > *t* / voiceless C__).

(2) English suffixes spelled with *-s* also assimilated, becoming voiced after a preceding voiced (non-sibilant) consonant, as in /dɒgz/ 'dogs', /rɪbz/ 'ribs'.

2.5.1.5 Distant (non-adjacent) assimilation

Assimilation at a distance (non-adjacent or non-contact) is not nearly as common as contact assimilation, though some changes having to do with vowels or consonants in the next syllable are quite common. Distant assimilations can be partial or total, and regressive or progressive. These are illustrated in the following examples.

(1) Proto-Indo-European **penk^we* > Latin *k^wink^we* (spelled *quinque*) 'five' (total distant regressive assimilation); Proto-Indo-European **pek^w-* > Italic **k^wek^w-* 'to cook, ripen' (compare Latin /kok^w-/ in *coquere* 'to cook').

(2) Proto-Indo-European **penk^we* > pre-Germanic **penpe* 'five' (compare German *fünf*) (total distant progressive assimilation)

(3) Umlaut (see the example above illustrating phonemic split in English) is a well-known kind of change which involves distant assimilation in which a vowel is fronted under the influence of a following front vowel (or a *j*), usually in the next syllable. Umlaut has been particularly important in the history of Germanic languages.

2.5.2 Dissimilation

Dissimilation, the opposite of assimilation, is change in which sounds become less similar to one another. Assimilation is far more common than dissimilation; assimilation is usually regular, general throughout the language, though sometimes it can be sporadic. Dissimilation is much rarer and is usually not regular (is sporadic), though dissimilation can be regular. Dissimilation often happens at a distance (is non-adjacent), though contact dissimilations are not uncommon. The following examples illustrate these various sorts of dissimilatory changes.

(1) English dialects dissimilate the sequence of two nasals in the word *chimney* > *chim(b)ley*.

(2) Instances of multiple occurrences of *r* within a word are often sporadically dissimilated in Romance languages; for example, sequences of /r...r/ often become /l...r/, sometimes /r...l/: Latin *peregrīnus* 'foreigner, alien' > Italian *pellegrino* 'foreigner, pilgrim, traveller'; French *pèlerin* (compare Spanish *peregrino* which retained the two *r*'s (English *pilgrim* is a loanword from Old French *pelegrin*); Latin *arbor* > Spanish *árbol*. This is distant progressive dissimilation. In a more regular

dissimilation involving these sounds, the Latin ending *-al* dissimilated to *-ar* when attached to a root ending in *l*; this is illustrated in the following Latin loans in English, *alveolar*, *velar*, *uvular*, which have dissimilated due to the preceding *l*; these can be contrasted with forms in which *-al* remains unchanged because there is no preceding *l*, for example, *labial*, *dental*, *palatal*. Some examples from Spanish which illustrate this suffix (though with a different meaning) in both its original and dissimilated form are: *pinal* 'pine grove' (based on *pino* 'pine'), *encinal* 'oak grove' (compare *encino* 'oak'), but *frijolar* 'bean patch' (compare *frijol* 'bean'), *tular* 'stand of reeds' (see *tule* 'reed, cattail'), *chilar* 'chile patch' (based on *chile* 'chili pepper').

(3) *Grassmann's Law*, a famous sound change in Indo-European linguistics, is a case of regular dissimilation in Greek and Sanskrit where in roots with two aspirated stops the first dissimilates to an unaspirated stop. These are voiced aspirated stops in Sanskrit and voiceless aspirated stops in Greek:

Sanskrit *bhabhūva* > *babhūva* 'became' (reduplication of root *bhū-*)

Greek *phéphūka* > *péphūka* 'converted' (reduplication of *phū-* 'to engender').

Frequently cited Greek examples which show Grassmann's Law in action are:

trikh-ós 'hair' (genitive singular) / *thrík-s* (nominative singular)
tréph-ō 'I rear (nourish, cause to grow)' / *thrép-s-ō* 'I will rear'
trekh-ō 'I walk' / *threk-s-ō* 'I will walk'

Greek *trikhós* 'hair' (genitive singular) comes from earlier **thrikh-ós*, to which Grassmann's Law has applied to dissimilate the *th* because of the following aspirated *kh* (**th . . . kh* > *t . . . kh*); similarly, *tréphō* 'I rear' is from **thréph-ō*, where **th . . . ph* > *t . . . ph*. In *thríks* 'hair (nominative singular)', from **thrikh-s*, the *kh* lost its aspiration before the immediately following *s* (the nominative singular ending) (**khs* > *ks*), and thus Grassmann's Law did not apply in this form. This left initial *th* still aspirated, since there was no longer a sequence of two aspirates in the same root which would cause the first to dissimilate and lose its aspiration. Similarly, in *thrépsō* 'I will rear' (from **thréph-s-ō*) **phs* > *ps*, and with no second aspirated consonant (no longer a *ph* but now only *p*), the *th* remained aspirated in this word. These changes are seen more clearly in Table 2.3 (nom = nominative, gen = genitive, sg = singular).

TABLE 2.3: Grassmann's Law and its interaction with other Greek changes

	'hair' <i>nom sg</i>	'hair' <i>gen sg</i>	'I will rear'	'I rear'
Pre-Greek	*thrikh-s	*thrikh-os	*threph-s-ō	*threph-ō
deaspiration before <i>s</i>	thriks	—	threpsō	—
Grassmann's Law	—	trikhos	—	trephō
Greek forms	thriks	trikhos	threpsō	trephō

Most of the examples presented so far have been cases of distant dissimilations; some additional examples of contact and distant dissimilation are as follows.

(4) Finnish *k* > *h*/___*t*, *d*, as in, for example, /tek-dæ/ > *tehdæ* 'to do' (spelled *tehdä*) (compare *teke-e* 'he/she does'); /kakte-na/ > *kahtena* 'as two' (compare *kaksi* 'two') from /kakte-/ to which other changes applied, *e* > *i*/___# (*kakte* > *kakti*) and *t* > *s*/___*i* (*kakti* > *kaksi*); since as a result of these changes the *k* no longer appeared before a *t* or *d* in *kaksi*, it remained *k* and so it did not change to *h* (as it did, for example, in *kahtena* 'as two', where it did change to *h*). This is a regular change; all *kt* and *kd* clusters in native words changed to *ht* and *hd* respectively.

(5) In K'iche' (Mayan), the velar stops (*k*, *k'*) were palatalised when the next consonant after an intervening non-round vowel was a uvular (*q*, *q'*, *χ*): *kaq* > *k'aq* 'red'; *ifk'aq* > *ifk'j'aq* 'fingernail, claw'; *k'aq* > *k'j'aq* 'flea'; *ke:χ* > *k'j'e:χ* 'horse'. The difference between a velar and a uvular stop in the same word is difficult both to produce and to perceive, and for this reason words with *k*(')*Vq*(') have palatalised the velar (*k*, *k'*) in order to make them more distinguishable from the uvular (*q*, *q'*) in these words. This is a regular change (Campbell 1977).

(6) In the history of Finnish, an /*a*/ before an /*i*/ of a following morpheme in non-initial syllables regularly changed to /*o*/ or /*e*/, depending on the nature of the vowel in the preceding syllable. If the preceding vowel was non-round, /*a* + *i*/ became /*oi*/, and if it was round, /*a* + *i*/ became /*ei*/, thus dissimilating by taking the opposite value of rounding from that of the vowel of the preceding syllable, as in:

sadoilla 'by hundreds' (< *sata* 'hundred' + *i* 'plural' + *lla* 'by')
sodeissa 'in the wars' (< *sota* 'war' + *i* 'plural' + *ssa* 'in') (later, in a further change, the *ei*, as in *sodeissa*, monophthongised to give modern Finnish *sodissa*).

(7) In the change known as Dahl's Law in Bantu, a dissimilation in voicing took place with the result that stem-initial voiceless obstruents

became voiced in CVC- forms when the second consonant was voiceless in some of the languages where it happened, as for example in Logooli:

Proto-Bantu *ma-tako > amadako 'buttocks'

*ma-kuta > amaguta 'oil, fat' (Collinge 1985: 280).

While several of the examples just presented involve dissimilation in regular sound changes, sporadic dissimilations are more frequent on the whole. Another example of sporadic dissimilation is:

(8) In Old French *livel* (from which English borrowed *level*), the sequence of two *l*'s dissimilated, giving *nivel*, which became Modern French *niveau* 'level' through subsequent sound changes which affected the final *l*.

2.6 Kinds of Common Sound Changes

The following is a list of the names for various kinds of sound changes that are used in the literature on language change. In parentheses after each name is a visual representation based on nonsense forms which shows what happens in the change. A number of real examples of each kind of change is presented.

2.6.1 Deletions

2.6.1.1 Syncope (*atata* > *atta*)

The loss (deletion) of a vowel from the interior of a word (not initially or finally) is called *syncope* (from Greek *sunkopé* 'a cutting away', *sun-* 'with' + *kopé* 'cut, beat'); such deleted vowels are said to be 'syncopated'. Syncope is a frequently used term.

(1) The change in many varieties of English which omits the medial vowel of words such as *fam(i)ly* and *mem(o)ry* illustrates syncope.

(2) Starting in Vulgar Latin and continuing in the Western Romance languages, the unstressed vowels other than *a* were lost in the interior of words three syllables long or longer, as in *pópulu-* 'people' (*pópulu-* > *poplV-*), reflected by French *peuple* and Spanish *pueblo* (English *people* is borrowed from French); *fābulare* 'to talk' became *hablar* 'to speak' in Spanish (*fābulare* > *fablar(e)* > *hablar* /*ablar*/).

While syncope is normally reserved for loss of vowels, some people sometimes speak of 'syncopated' consonants. It is more common in the case of consonants just to speak of *loss* or *deletion*.

(3) For an example of 'syncopation' of consonants, in Swedish (and Scandinavian languages generally), in consonant clusters with three

consonants, the middle consonant was lost, as in *norðman* > *norman* (seen, for example, in *Normandy*, and *Norman French*, for the area of northern France where Vikings settled); **norðr-vegi* > **norwegi* (which gives English *Norway*, German *Norwegen*), which went on in Swedish to *Noregi* > *Norge* [norʝe] ‘Norway, Norwegian’; *Västby* ‘a town name’ [*Väst* ‘west’ + *by* ‘town’] > *Väsby* (Wessén 1969: 68).

2.6.1.2 Apocope (tata > tat)

Apocope (from Greek *apokopé* ‘a cutting off’, *apo-* ‘away’ + *kopé* ‘cut, beat’) refers to the loss (apocopation, deletion) of a sound, usually a vowel, at the end of a word, said to be ‘apocopated’. Apocope is a frequently used term.

(1) In words which had final *e* in Latin, this *e* was regularly deleted in Spanish in the environment VC__# if the consonant was a dental (*l*, *r*, *n*, *s*, *θ*) or *y* [j], as in *pane* > *pan* ‘bread’, *sōle* > *sol* ‘sun’, *sūdāre* > *sudar* ‘to sweat’.

(2) A comparison of the following Old English nouns with their modern counterparts shows the apocope of the final vowels in these words:

<i>Old English</i>	<i>Modern English</i>
sticca	stick
sunu	son
mōna	moon

(3) Estonian (a Finno-Ugric language) lost final vowels in words where this vowel was preceded either by a long vowel and a single consonant or by two consonants:

- **jalka* > *jalk* ‘foot, leg’
- **härkä* [hærkæ] > *härk* [hærk] ‘bull’
- **hooli* > *hool* ‘care, worry’
- **leemi* > *leem* ‘broth’

However, the vowel was not lost when preceded by a short vowel and a single consonant, as in **kala* > *kala* ‘fish’, **lumi* > *lumi* ‘snow’.

2.6.1.3 Aphaeresis (or apheresis) (atata > tata)

Aphaeresis (from Greek *aphairesis* ‘a taking away’) refers to changes which delete the initial sound (usually a vowel) of a word. Aphaeresis can be regular or sporadic. The sporadic change where the initial vowel which was present in Latin *apotēca* is lost in Spanish *bodega* ‘wine cellar, storeroom’ illustrates aphaeresis. (In this instance, intervocalic

-p- > -b- in Spanish, but initial *p-* remains *p-*; the *b* of *bodega* shows that the initial *a-* was still present when *p > b* and was deleted after this change.) Spanish dialects show many cases of sporadic aphaeresis: *caso* < *acaso* ‘perhaps, by chance’; *piscopal* < *episcopal* ‘episcopal’; *ahora* > *hora* ‘now’ (especially frequent in *horita* < *ahorita* ‘right now’). Aphaeresis is a rarely used term; many prefer just to speak of initial vowel loss.

2.6.2 Epenthesis or insertions (*asta > asata*)

Epenthesis inserts a sound into a word. (*Epenthesis* is from Greek *epi-* ‘in addition’ + *en* ‘in’ + *thesis* ‘placing’.)

2.6.2.1 Prothesis (*tata > atata*)

Prothesis (from Greek *pro-* ‘before’ + *thesis* ‘placing’) is a kind of epenthesis in which a sound is inserted at the beginning of a word. This is not a particularly frequent term, and such changes are also referred to as word-initial epentheses.

(1) Starting in the second century, Latin words beginning with *s* + Stop (*sp*, *st*, *sk*) took on a prothetic short *i*. The following examples trace the development to modern French and Spanish. The prothetic *i* became *e*, and later the *s* before other consonants was lost in French. (a) Latin *scutu* [skútu] ‘shield’ > *iskutu* > *eskutu* > Old French *escu* > Modern French *écu* [eky]; the sequence in Spanish was from Latin *scutu* [skútu] > *iskutu* > *eskutu* > *escudo*. (b) Latin *scola* [skóla] ‘school’ > *iskola* > *eskola* > Old French *escole* [eskolɛ] > Modern French *école* [ekɔl]; for Spanish: *scola* [skóla] > *iskola* > *escuela* [ɛskuéla]. (c) Latin *stabula* [stábula] ‘stable’ > *istabula* > *estabula* > Old French *estable* > Modern French *étable* [etábl]; for Spanish: *stabula* [stábula] > *istabula* > *estabula* > Spanish *estable*.

(2) In Nahuatl, forms which came to have initial consonant clusters, due to the loss of a vowel in the first syllable, take on an epenthetic (prothetic) *i*: **kasi* > *kfi* > *ikfi* ‘foot’ (compare *no-kfi* ‘my foot’).

2.6.2.2 Anaptyxis (anaptyctic) (VCCV > VCŮVCV)

Anaptyxis (from Greek *ana-ptussō* ‘unfold, open up, expand’) is a kind of epenthesis in which an extra vowel is inserted between two consonants (also called a ‘parasitic’ vowel or ‘svarabhakti’ vowel). This term is used very infrequently, since epenthesis covers this sort of change.

(1) Sporadic examples are the pronunciation in some dialects of English of *athlete* as [‘æθəlɪt] with the extra vowel and of *film* as [‘fɪləm].

(2) In another example, after the first syllable (which bears the stress), dialects of eastern Finland regularly add a short copy of the preceding vowel between the consonants of a consonant cluster which begins with a resonant (*l* or *r*), for example (the *ä* of Finnish spelling represents [æ]):

<i>Eastern dialects</i>	<i>Standard</i>	<i>Finnish</i>
nelejä	neljä	four
kolome	kolme	three
pilikku	pilkku	comma, dot
jalaka	jalka	foot, leg
kylymä	kylmä	cold
silimä	silmä	eye

(3) Old Swedish added a very short *e* between a consonant and *r* in monosyllabic words ($\emptyset > e / C_r\#$): **dagr* > *daghër* ‘day’, **bökr* > *bökër* ‘books’ (Wessén 1969: 59).

2.6.2.3 *Excrecence* (*amra* > *ambra*; *anra* > *andra*; *ansa* > *antsa*)

Excrecence (from Latin *ex* ‘out’ + *crēscēntia* ‘growth’) is a type of epenthesis which refers to a consonant being inserted between other consonants; usually the change results in phonetic sequences which are somewhat easier to pronounce than the original clusters would be without the excrecent consonant.

(1) Old English *θy:mel* > Modern English *thimble* (compare *humble* / *humility*); Old English *θunrian* > Modern English *thunder* (compare the German cognate *Donner* ‘thunder’). The example of *chimney* > *chimbley* in English dialects was already mentioned above.

(2) Proto-Indo-European **a-mrt-os* > Greek *ambrotos* ‘immortal’ (seen in English in *ambrosia* ‘food of the gods’ (what makes you immortal), a loan with its origin ultimately in Greek).

(3) Spanish *hombre* [ombre] ‘man’ is from Latin *hominem*, which became *homne* through regular sound changes (syncope, *hominem* > *homne(m)*), then *homre* through dissimilation of the adjacent nasals (*mn* > *mr*), and then *b* was inserted – an example of excrecence – to make the transition from *m* to *r* easier to pronounce ([omre] > [ombre]). Contrast French *homme* ‘man’, which shows a different history, where at the *homne* stage, the *n* assimilated to the preceding *m* (*homne* > *homme*). Latin *fēmīna* ‘woman’ became *femna* through syncope of the middle vowel; Old French assimilated the *n* to the adjacent *m*, ultimately giving *femme* ‘woman’; Spanish, however, dissimilated the two nasals (*femna* > *femra*), and this then underwent excrecence, inserting a *b*

between the *m* and *r*, giving modern Spanish *hembra* /embra/ 'female' (in Spanish, *f* > *h* > Ø, though *h* remains in the orthography). Another example is Latin *nomināre* 'to name' > *nomnar* > *nomrar* > *nombrar* in Spanish; French assimilated *mn* to *mm* in this word, giving *nommer*.

(4) French *chambre* 'room' comes from Latin *camera* 'arched roof'; when the *mr* cluster was created because of the regular syncope of the medial *e* (*camera* > *camra*) the *b* was added between the two (this is the source of the loanword *chamber* in English, from French *chambre* 'room').

(5) Greek *andros* 'man (genitive singular)' comes from earlier *anr-os* (compare Greek *anēr* 'man (nominative singular)').

2.6.2.4 Paragoge (*tat* > *tata*)

Paragoge (from Greek *paragōgē* 'a leading past') adds a sound (usually a vowel) to the end of a word.

(1) Dialects of Spanish sometimes add a final *-e* (sporadically) to some words that end in *-d*: *huésped* < *huésped* 'guest'; *rede* < *red* 'net'.

(2) Arandic languages (a branch of Pama-Nyungan, in Australia) regularly added a final *ə* at the end of words (Ø > *ə* / __ C#), as in **nun̩karn* > *ŋkwərnə* 'bone' (Koch 1997: 281–2). This is a rarely used term; examples of this kind of change are rare at best, and many linguists are quite hostile to the use of this term. It is probably best not to have to be bothered with it, since mention of the insertion of a final vowel covers the examples.

2.6.3 Compensatory lengthening (*tast* > *ta:t*)

In changes of compensatory lengthening, something is lost and another segment, usually a vowel, is lengthened, as the name implies, to compensate for the loss.

(1) In the history of English, a nasal was lost before a fricative with the simultaneous compensatory lengthening of the preceding vowel, as in the following from Proto-Germanic to English: **tonθ* > *tōθ* (> Modern English /tuθ/) 'tooth'; **fīm̩f* > *fīf* (> Modern English /faɪv/) 'five'; **gans* > *gōs* (> Modern English /gus/) 'goose' (compare the German cognates, which retain the *n*: *Zahn* [tsa:n] 'tooth', *fünf* 'five' and *Gans* 'goose').

(2) An often-cited example is that of the compensatory lengthening which took place in the transition from Proto-Celtic to Old Irish, as in:

Proto-Celtic	Old Irish	
*magl	ma:l	'prince'
*kenetl	cene:l	'kindred', 'gender'
*etn	e:n	'bird'
*datl	da:l	'assembly'

(Arlotto 1972: 89)

(3) Old Norse compensatorily lengthened vowels together with the loss of *n* before *s* or *r* ($n > \emptyset / __s, r$), as in Proto-Scandinavian **gans* > *gōs* 'goose', **ons* > *ōs* 'us', **þunra*- 'thunder' > *pōr* 'thunder, Thor' (the latter is the name of the Scandinavian god *Thor* and the source of *Thursday*, literally 'Thor's day'; compare English *thunder* and German *Donner* 'thunder', cognates of these Scandinavian forms). (Compare Wessén 1969: 48.)

2.6.4 Rhotacism (VsV > VrV)

Rhotacism (from Greek *rhotakismos* 'use of *r*') refers to a change in which *s* (or *z*) becomes *r*; usually this takes place between vowels or glides; some assume that often cases of rhotacism go through an intermediate stage of *-s-* > *-z-* > *-r-*, where *s* is first voiced and then turned into *r*. The best-known examples of rhotacism come from Latin and Germanic languages.

(1) In the oldest Latin, $s > r / V__V$, as seen in *honōr-is* 'honour (genitive singular)' and *honōr-i* 'honour (dative singular)'; *honos* 'honour (nominative singular)' retains *s*, since it is not between vowels in this form. (In later Latin, *honos* 'nominative singular' became *honor*, due to analogy with the other forms which contain the intervocalic *r* due to rhotacism; see Chapter 4.)

(2) In West Germanic and North Germanic, $*z > r$: Proto-Germanic **hauzjan* 'hear' > Old High German *hōren* (Modern German *hören*), Old English *hieran* (Modern English *hear*); contrast the Gothic cognate *hausjan* 'hear' which did not undergo the change (Gothic is East Germanic). Proto-Germanic **maizōn* 'greater' (from Proto-Indo-European **me-is*, comparative of **mē-* 'big') underwent rhotacism to become Old English *māra* 'greater', modern English *more*. (*Most* is from Old English *mæst*, Germanic **maista-* 'most', from Proto-Indo-European **mē-isto-*, the superlative of 'big'.)

While changes involving rhotacism are rare, the term is a frequent one in linguistic textbooks, due no doubt to the examples of rhotacism known from Latin and Germanic.

2.6.5 Metathesis (asta > atsa; asata > atasa)

Metathesis (from Greek *metathesis* 'transposition, change of sides') is the transposition of sounds; it is a change in which sounds exchange positions with one another within a word. Most instances of metathesis are sporadic changes, but metathesis can also be a regular change.

(1) Sporadic examples of metathesis occur in the history of English: Old English *brid* > Modern English *bird*; Old English *hros* > *horse*.

(2) Spanish has sporadic cases of *l/r* metathesis, as in *palabra* 'word' < Latin *parabola* (r . . . l > l . . . r).

(3) Spanish has undergone a reasonably regular change of metathesis in which sequences of *dl*, which were created by vowel loss, shifted to *ld*, as in *tilde* 'tilde, tittle' (the 'swung dash' on ñ) < *titulus* 'label, title' (through a series of regular changes: *titulus* > *tidulo* > *tidlo* > *tildo* [metathesis *dl* > *ld*] > *tilde*); *molde* 'mould, pattern' < *modulus* 'measure' (*modulus* > *modlo* > *moldo* > *molde*).

(4) Some examples of sporadic metatheses in various Spanish dialects are: *probe* < *pobre* 'poor'; *sequina* < *esquina* 'corner'; *naide* < *nadie* 'nobody'; *Grabiel* < *Gabriel* 'Gabriel'.

2.6.6 Haplology (tatasa > tasa)

Haplology (from Greek *haplo-* 'simple, single') is the name given to the change in which a repeated sequence of sounds is simplified to a single occurrence. For example, if the word *haplology* were to undergo haplology (were to be haplogised), it would reduce the sequence *lolo* to *lo*, *haplology* > *haplogy*. Some real examples are:

(1) Some varieties of English reduce *library* to 'libry' [laibri] and *probably* to 'proibly' [prɒbli].

(2) *pacifism* < *pacificism* (contrast this with *mysticism* < *mysticism*, where the repeated sequence is not reduced).

(3) An often-cited example is Latin *nūtrix* 'nurse' < *nūtri-trix* (*nūtri-* 'nourish, suckle, nurse' + *-trix* 'female agent').

(4) English *humbly* was *humblely* in Chaucer's time, pronounced with three syllables, but has been reduced to two syllables (only one *l*) in modern standard English.

2.6.7 Breaking

Breaking refers to the diphthongisation of a short vowel in particular contexts. While changes which diphthongise vowels are common (see below), the term 'breaking' is most commonly encountered in Germanic

linguistics, used for example in discussions of the history of Afrikaans, English, Frisian and Scandinavian.

(1) For example, Old English underwent the breaking of **i* > **io*, **e* > *eo*, **a* > *ea* before *l* or *r* followed by a consonant, or before *h*, as in **kald* > *ceald* 'cold', **erþe* > *eorpe* 'earth', **næh* > *nēah* 'near', **sæh* > *seah* 'saw' (compare Beekes 1995: 275; Hogg 1992: 102–3). (The history of breaking in English is very complex and the phonetic interpretation is disputed; the spelling <ea> probably represented [æa].)

(2) Old Norse *e* > *ea* (then later > *ia*) before *a* of the next syllable, which is then syncopated, as in **heldaz* > *hialdr* 'battle', and *e* > *eo* > *io* > *iō* before *u* of the next syllable (which also later underwent syncope), as in **erpu* > *iōrp* 'earth' (Beekes 1995: 67).

2.6.8 Other frequent sound changes

There are several other kinds of sound change which are frequently found in discussions of the history of various languages, even though they are usually not included in typical lists of kinds of sound changes. Some of the most common of these follow, described in less detail and with fewer examples. This is by no means an exhaustive listing.

2.6.8.1 Final-devoicing

A very common change is the devoicing of stops or obstruents word-finally; some languages devoice sonorants (*l*, *r*, *w*, *j*, nasals) and some devoice final vowels. In some languages, the devoicing takes place both word-finally and syllable-finally (as in German). In Kaqchikel (Mayan), *l*, *r*, *w*, *j* > voiceless / __#. The sonorants *l*, *r*, *w*, *j* underwent the sound change in which they became voiceless at the end of words, for example, *a:l* 'child' [a:l] > [a:ɻ], *kar* 'fish' [kar] > [kaɻ], *kow* 'hard' [kow] > [koɻ], *xa:j* 'house' [xa:j] > [xa:ɻ].

2.6.8.2 Intervocalic voicing (and voicing generally)

It is also very common for various sounds to become voiced between vowels. This affects just stops in some languages, fricatives in others, all obstruents in others. Often the voicing is not just between vowels, but also occurs with the glides *w* and *j*. Many languages also voice stops (some also voice other consonants) after nasals or after any voiced sound; some also voice other sounds when they come before voiced sounds. For example, in the transition from Latin to Spanish (and this includes other Western Romance languages as well), the voiceless stops become voiced between vowels, as illustrated in *lupu* > *lobo* 'wolf' (*p* > *b*), *vīta* > *vida* 'life' (*t* > *d*) and *fīcu* > *higo* 'fig' (*k* > *g*).

2.6.8.3 Nasal assimilation

It is extremely common for nasals to change to agree with the point of articulation of following stops (in some languages with any following consonant): *np* > *mp*, *mt* > *nt*, *nk* > *ŋk* and so on.

2.6.8.4 Palatalisation

Palatalisation often takes place before or after *i* and *j* or before other front vowels, depending on the language, although unconditioned palatalisation can also take place. Two common kinds of changes are called 'palatalisation'. One is the typical change of a velar or alveolar sound to a palato-alveolar sound, as in *k* > *č*, *t* > *č*, *s* > *š* and so on. For example, in the history of Spanish the sequence *kt* became *jt* (where *j* was the second element of a diphthong), and then the *t* further became palatalised because of the *j*, producing *č*, as in *lakte* > *laĵte* > *leĵte* > *leĵče* > *leče* 'milk' (spelled *leche*) and *okto* > *oiĵto* > *oiĵčo* > *očo* 'eight' (spelled *ocho*). In a second kind of change called palatalisation, a consonant becomes palatalised by taking palatalisation as a secondary manner of articulation, as in eastern dialects of Finnish, where consonants are palatalised before *i*, *susi* > *sus^ji* (*sus^j*) 'wolf', *tuli* > *tul^ji* (*tul^j*) 'fire'. Slavic languages are well known for a number of palatalisation changes. Changes of the first sort of palatalisation unconditioned by front vowels are not uncommon. For example, the change of *k* > *č* spread among several languages of the Northwest Coast linguistic area (see Chapter 12); in Cholan as well as in a few other Mayan languages, **k* > *č* in general.

2.6.8.5 Diphthongisation

Diphthongisation refers to any change in which an original single vowel changes into a sequence of two vowel segments which together occupy the nucleus of a single syllable. For example, earlier (in the discussion of splits) we saw the change in English in which original long high vowels /ī/ and /ū/ became /ai/ and /au/ respectively, in /mīs/ > /mais/ 'mice' and /mūs/ > /maus/ 'mouse' (a part of the Great Vowel Shift; see section 2.8, p. 48 below). In Spanish, the Proto-Romance vowels **e* and **o* diphthongised to *ie* and *ue* respectively, as in **petra* > *piedra* 'stone', **bono* > *bueno* 'good'. In Finnish, original long mid vowels diphthongised by raising the first portion of the vowel: *e*: > *ie* (long vowels in Finnish are spelled orthographically with a double vowel, *tee* > *tie* 'road'); *o*: > *uo* (*too* > *tuo* 'bring'); *ø*: > *yø* (*tøø* > *tyø* [spelled *työ*] 'work'). The *ī* and *ū* of Middle High German became *ai* and *au* respectively in Modern German, as in *īs* > *Eis* /ais/ 'ice' and *hūs* > *haus* /haus/ 'house'. *Breaking* (above) is a kind of diphthongisation.

2.6.8.6 Monophthongisation

In monophthongisation, a former diphthong changes into a single vowel, as in the change from Classical Latin to Vulgar Latin of *au* to *o* which shows up as *o* in the modern Romance languages, as in *auru-* > Spanish *oro*, French *or* 'gold'; *tauru-* > Spanish *toro* 'bull'; *causa-* 'cause, case, thing' > Italian *cosa*, Spanish *cosa* 'thing', French *chose* [ʒoz] 'thing'. Another case is the Sanskrit change of **ai* > *e* and **au* > *o*, as in the first syllable of *kekara* 'squinting' < Proto-Indo-European **kaiko-* 'one-eyed, squinting' (compare Latin *caecus* 'blind'). An instance of monophthongisation found in the history of French is somewhat complicated by the other changes and orthographic conventions with which it is related. At the end of the twelfth century, French changed *al* > *au* before consonants, as in *altre* > *autre* 'other'; then later *au* monophthongised to *o*, [otR] (still spelled *autre*) 'other'. Thus, *cheval* [ʃəvál] 'horse' retained *al*, since no consonant follows it, but *chevals* > *chevaux* [ʃəvó] 'horses' (*als* > *aus* > *os* > *o* in this case) because a consonant (*s*) did follow. Such forms are spelled in Modern French with *x*, which stems from the practice in the Middle Ages of using *x* to abbreviate *-us* (for example, <nox> for *nous* 'we, us'); this gave the spelling <chevax> for 'horses', and when the use of the abbreviation ceased, <x> came to be understood as a substitute for <s>, and so the *u* heard at that time in the *au* diphthong was reinstated in the writing of such words, hence the modern spelling *chevaux* (Darmesteter 1922: 151–2).

2.6.8.7 Vowel raising

Changes in which low vowels change to mid (or high) vowels, or mid vowels move up to high vowels, are quite common. In particular, long or tense vowels frequently rise. Sometimes these changes can involve rather wholesale changes in much of the vowel system, known as vowel shifts, as in the Great Vowel Shift in English (see p. 48 below). Often the raisings are at the ends of words, such as the Finnish change of *e* to *i* word-finally (for example, *vere-* > *veri* 'blood').

2.6.8.8 Vowel lowering

Vowel lowering, the opposite of raising, results in high vowels becoming mid or low vowels, or mid vowels becoming low. For example, vowels are often lowered before uvular and pharyngeal consonants, and when a lower vowel occurs in the next syllable, to mention a few common environments. Also, nasalised vowels are lowered very frequently. For example, Proto-Dravidian **i* and **u* were lowered before **a* in the next syllable in South Dravidian languages (as in **ilay* > *elay* 'leaf', **pukay*

> *pokay* ‘smoke’ (Zvelebil 1990: 5–6). However, vowel lowering does not necessarily need to be conditioned.

2.6.8.9 Nasalisation

In nasalisation, vowels often become nasalised in the environment of nasal consonants. The typical scenario is for the nasalised vowels to become phonemic (contrastive) when later in time the nasal consonant is lost, as in French *bon* > [bõn] > [bõ] ‘good’ (spelled *bon*).

2.6.8.10 Lenition (weakening)

Lenition is a reasonably loose notion applied to a variety of kinds of changes in which the resulting sound after the change is conceived of as somehow weaker in articulation than the original sound. Lenitions thus typically include changes of stops or affricates to fricatives, of two consonants to one, of full consonants to glides (*j* or *w*), sometimes of voiceless consonants to voiced in various environments, and so on. Lenition can also include the complete loss of sounds. An example of lenition is the change of the intervocalic stops which were voiceless in Latin (*p*, *t*, *k*) to voiced stops (*b*, *d*, *g*) in Spanish, as in *skōpa* > *eskoba* (spelled *escoba*) ‘broom’, *natāre* > *nadar* ‘to swim’, *amika* > *amiga* ‘female friend’.

2.6.8.11 Strengthening

The variety of changes which are sometimes referred to as ‘strengthening’ share a loosely defined notion that, after the change, the resulting sound is somehow ‘stronger’ in articulation than the original sound was. For example, in the change in Q’eqchi’ (Mayan) of *w* > *kw* (*winq* > *kwi:nq* ‘person’) and *j* > *tj* (*ijax* > *itjax* ‘seed’), the *kw* and *tj* are perceived as being stronger than the original *w* and *j*.

2.6.8.12 Gemination

Gemination (from Latin *geminātiōn-em* ‘doubling’, related to *geminus* ‘twin’, seen in the astrological sign *Gemini*) means, as the name suggests, the doubling of consonants, that is, the change which produces a sequence of two identical consonants from a single starting consonant, as in *t* > *tt*. For example, in Finnish dialects in a sequence of short vowel – short consonant – long vowel (VCV:) the consonant is regularly geminated (long vowels and long or geminate consonants are written double: /aa/ = [a:], /ss/ = [s:]), as in *osaa* > *ossaa* ‘he/she knows’, *pakoon* > *pakkoon* ‘into flight (fleeing)’.

2.6.8.13 Degemination

When a sequence of two identical consonants is reduced to a single occurrence, the change is often called *degemination*. An example is the change from Latin *pp*, *tt*, *kk* to Spanish *p*, *t*, *k* respectively, as in: *mittere* > *meter* 'to put', *pekkātu-* > *pekado* (spelled *pecado*) 'sin, misfortune'.

2.6.8.14 Affrication

Affrication refers to changes in which a sound, usually a stop, sometimes a fricative, becomes an affricate; for example, *t* > *ts* / __ *i*, and *k* > *č* / __ *i*, *e* are quite common.

2.6.8.15 Spirantisation (fricativisation)

Not uncommonly, an affricate will be weakened (lenited) to a fricative, or a stop will become a fricative. In Cuzco Quechua, syllable-final stops become fricatives, as for example in *rapra* > *raɸra* 'leaf, wing'; **suqta* > *soχta* 'six'. A common change is the spirantisation of stops between vowels, well known in Dravidian languages (for example, Proto-Dravidian **tapu* 'to perish' > Kannada *tavu* 'to decrease') (Zvelebil 1990: 8). Balto-Finnic languages underwent a similar change in closed syllables (that is, in / __ CC or / __ C#, as in *tava-n* 'custom-Accusative Singular' < **tapa-n*).

2.6.8.16 Deaffrication

When an affricate becomes a fricative (not an uncommon change), it is sometimes called deaffrication. For example, in Chiltiupán Pipil (a Uto-Aztecan language of El Salvador), *ts* > *s*, as in *tsutsukul* > *susukul* 'water jug'.

2.6.8.17 Lengthening

Lengthening refers to the change in which some sound, usually a vowel, is lengthened in some context. For example, in Q'eqchi' (Mayan), vowels are lengthened before a consonant cluster which begins with a sonorant (*l*, *r*, *m* or *n*): *kenq'* > *ke:nq'* 'bean', *ɬalk* > *ɬa:lk* 'brother-in-law'.

2.6.8.18 Shortening

Sounds, particularly vowels, often undergo changes which shorten them in a variety of contexts, such as word-finally, before consonant clusters, when unstressed, and so on. Long vowels also often merge with short vowels generally in a language. For example, in Middle English, long vowels were shortened before a consonant cluster, as in Old English *cēpte* > Middle English *kepte* 'kept' (compare modern *keep/kept*), and

in trisyllabic forms when followed by two or more syllables, as in *hōliday* > *holiday* 'holiday' (contrast modern *holy* with *holiday*).

2.7 Relative Chronology

A sound change pertains to a particular period of time in the history of the language in which it takes place. This means that some sound changes may take place in the language at some earlier stage and then cease to be active, whereas others may take place at some later stage in the language's history. Often in the case of different changes from different times, evidence is left behind which provides us with the clues with which to determine their relative chronology, that is, the temporal order in which they took place. (For those who are familiar with rule ordering in synchronic phonology, it may be helpful to point out that relative chronology is very similar, but in historical linguistics refers to the historical sequence in which different changes took place.) Part of working out the phonological history of a language is determining the relative chronology of the changes which have affected the language. A couple of straightforward examples show what is involved.

(1) In the history of Swedish, the change of umlaut took place before syncope, in the sequence:

1. Umlaut: $a > e / _ (C)Ci$
2. Syncope: $i > \emptyset / V(C)C_r$ after a root syllable (approximate form of the changes; they are more general, but only the portions affecting this example are presented here).

From Proto-Germanic to Modern Swedish: **gasti-z* > Proto-Scandinavian *gastiz* > *gestir* > Old Norse *gestr* > Modern Swedish *gäst* 'guest' (*gastiz* > *gestir* > *gestr* > *gest* (spelled *gäst*)) (Wessén 1969: 10–11). We can be reasonably certain that these changes took place in this chronological order, since if syncope had taken place first (*gastir* > *gastr*), then there would have been no remaining *i* to condition the umlaut and the form would have come out as the non-existent **gastr*. (Note that **X* is the symbol used in this book to signal ungrammatical and incorrect forms, distinguished from *** which signals reconstructed forms and forms from a proto-language.)

(2) Finnish underwent the two changes:

1. $e > i / _ \#$
2. $t > s / _ i$

In words such as Proto-Finno-Ugric **vete* 'water' which became *vesi* in

Finnish, clearly (1) ($e > i / _\#$) had to change final e into i before (2) ($t > s / __i$) could take place, since (2) only applied with i , and the i of *vesi* would not have been present in this word unless (1) had applied. In *vete-nä* ($\ddot{a} = [\text{æ}]$) 'water (essive singular case)', the root *vete-* retained its e because it was not word-final, but rather is followed by the case ending *-nä*; since there is no final i in *vete-nä*, the t did not become s by sound change (2). (Examples involving relative chronology come up again in several places in this text, especially in Chapters 3, 5 and 8.)

2.8 Chain Shifts

Sometimes several sound changes seem to be interrelated, with more far-reaching impact on the overall phonological system of the language. These changes do not happen in isolation from one another, but appear to be connected, dependent upon one another in some way. Such interconnected changes are called *chain shifts*. Several reasons have been put forward why chain shifts should occur, and the final word about this is surely yet to come, though the connectedness of the changes involved has often been attributed to notions such as 'symmetry in phonemic inventories', 'naturalness' or 'markedness', 'maximum differentiation' and 'a tendency for holes in phonological patterns to be filled'.

Let's begin to clarify what this means with a brief characterisation of what is involved. It is believed that the sounds of a sound system are integrated into a whole whose parts are so interconnected that a change in any one part of the system can have implications for other parts of the system. The general idea behind the chain shifts is that sound systems tend to be symmetrical or natural, and those that are not, that is, those which have a 'gap' in the inventory, tend to change to make them symmetrical or natural (to fill in the gap). However, a change which fills one gap may create other gaps elsewhere in the system which then precipitate other changes towards symmetry/naturalness to rectify its effects, thus setting off a chain reaction.

Chain shifts are classified into two types, *pull chains* (often called *drag chains*) and *push chains*. In a *pull chain*, one change may create a hole in the phonemic pattern (an asymmetry, a gap) which is followed by another change which fills the hole (gap) by 'pulling' some sound from somewhere else in the system and changing that sound to fit the needs of symmetry/naturalness so that it fills the gap, and, if the sound which shifted to fill the original hole in the pattern leaves a new hole elsewhere in the pattern, then some other change may 'pull' some other sound in to fill that gap.

Behind a *push chain* is the notion that languages (or their speakers) want to maintain differences between sounds in the system in order to facilitate understanding, the processing of what is heard. If a sound starts changing by moving into the articulatory space of another sound, in the push-chain view, this can precipitate a change where the sound moves away from the encroaching one in order to maintain distinctions important to meaning. If the fleeing sound is pushed towards the articulatory space of some other sound, then it too may shift to avoid the encroachment, thus setting off a chain reaction called a push chain. Sometimes the notion of 'maximum differentiation' is called upon in these instances. The idea behind maximum differentiation is that the sounds in a sound system tend to be distributed so as to allow as much perception difference between them as the articulatory space can provide. Thus, if a language has only three vowels, we expect them to be spread out, with *i* (high front unrounded), *u* (high back rounded) and *a* (low central or back unrounded); we do not expect them to be bunched up, for example, all in the high front area (say, *i*, *ɪ* and *y*), and these intuitions are confirmed by the languages of the world, where most of the three-vowel systems have /i, u, a/ or /i, o, a/. If a language has four stops, we do not expect them to be bunched at one point of articulation, say all labials (*p*, *b*, *p'*, *p^h*) with none at other points of articulation; rather, we expect them to be spread across alveolar, velar and perhaps other points of articulation (see Martinet 1970).

Let's now look at some specific examples to give these abstract notions some substance.

(1) Classical Latin had three series of stops intervocalically, the geminates (*pp*, *tt*, *kk*), the single voiceless (*p*, *t*, *k*), and the voiced (*b*, *d*, *g*). These three original series of stops changed from Latin to Spanish in an interrelated fashion:

1. Geminate (double) stops became single voiceless stops: *pp* > *p*, *tt* > *t*, *kk* > *k*, as in Latin *cuppa* > Spanish *copa* 'cup'; *gutta* > *gota* 'drop'; *bucca* [bukka] 'puffed-out cheek' > *boca* [boka] 'mouth'.
2. Plain voiceless stops became voiced stops: *p* > *b*, *t* > *d*, *k* > *g*, as in Latin *sapere* > Spanish *saber* 'to know'; *wīta* > *vida* 'life'; *amīka* > *amiga* 'female friend'.
3. Voiced stops (except *b*, which remained) were lost: *d* > $\emptyset$, *g* > $\emptyset$ (*b* > *b*), as in Latin *cadēre* > *caer* 'to fall', *crēdere* > *creer* 'to believe'; *rēgīna* > *reina* 'queen'.

The series of changes in the stops in the development from Latin to

Historical Linguistics: An Introduction

Spanish has been interpreted as a push chain (let *tt*, *t* and *d* represent all the stops in the three respective series), having taken place in the order:

(1) *tt* > *t*, (2) *t* > *d*, (3) *d* > $\emptyset$.

In this view, as the geminates began to simplify, (1) *tt* > *t*, this put pressure on the plain voiceless series to get out of the way, (2) *t* > *d*, which in turn put pressure on the voiced series, causing it to be lost, (3) *d* > $\emptyset$. It would also be possible to interpret this series of changes as a pull chain, applying in the temporal sequence:

(3) *d* > $\emptyset$, (2) *t* > *d*, (1) *tt* > *t*.

In this possible scenario, the loss of the voiced stops, (3) *d* > $\emptyset$, left a gap in the inventory, which was filled by the shift of the plain voiceless stops to voiced, (2) *t* > *d*; but this then left a gap for the voiceless stops, and a language with voiceless geminates but no plain voiceless stops would be unexpected, so (1) *tt* > *t* took place.

(2) Grimm's Law is an extremely important set of sound changes in historical linguistics; it is intimately involved in the history of the comparative method and the regularity hypothesis (and so we come back to it in more detail again in Chapter 5). Grimm's Law covers three interrelated changes in the series of stops from Proto-Indo-European to Proto-Germanic:

1. voiceless stops > fricatives: *p*, *t*, *k* > *f*, *θ*, *h*, respectively;
2. voiced stops > voiceless stops: *b*, *d*, *g* > *p*, *t*, *k*, respectively;
3. voiced aspirated stops > plain voiced stops: *bh*, *dh*, *gh* > *b*, *d*, *g*, respectively.

This means that words in modern Germanic languages, because they inherit the results of these changes from Proto-Germanic, show the effects of the changes, but when cognate words from other Indo-European languages (not from the Germanic branch) are compared with those from Germanic languages, they do not show the results of these changes. Some examples which illustrate the effects of Grimm's Law are given in Table 2.4, which compares words from English (Germanic) with cognates from Spanish and French (Romance languages, not Germanic). In some cases, Spanish and French have undergone other changes of their own, making the correspondences expected from Grimm's Law not so obvious today, though the connections are clear when we take the full history of these languages into account – this is particularly true of the voiced aspirated sounds, for which examples from Sanskrit and Latin are substituted instead.

Sound Change

TABLE 2.4: Grimm's Law in English, Spanish and French comparisons

	<i>Spanish</i>	<i>French</i>	<i>English</i>
*p > f	pie padre por	pied (Old French pié) père per	foot father for
*t > θ	tres tu	trois tu	three thou
*k > h	(can) ciento corazón	chien (< kani-) cien (< kent-) cœur	hound (< hūnd) hundred heart
*b > p	[NOTE: *b was rare in Proto-Indo-European; some say it was missing]		
*d > t	diente dos	dent deux	tooth (< tanθ) two
*g > k	— grano	genou grain	knee corn
	<i>Sanskrit</i>	<i>Latin</i>	<i>English</i>
*bh > b	bhrātar bhāra-	frāter fer- (f < *bh)	brother bear
*dh > d	dhā-	facere (f < dh)	do, did, deed
*gh > g	ḡamsa (< *gh)	(h)anser	goose

Grimm's Law can be interpreted as either a pull chain or a push chain (where *t*, *d* and *dh* represent all the stops of these series). If the temporal sequence were

(1) *t* > θ, (2) *d* > t, (3) *dh* > d,

then it would be assumed that (1) *t* > θ took place first, leaving the language with the three series, voiceless fricatives (*f*, *θ*, *h*), voiced stops (*b*, *d*, *g*) and voiced aspirates (*bh*, *dh*, *gh*), but no plain voiceless stops (no *p*, *t*, *k*). This would be an unnatural situation which would pull in the voiced stops to fill the gap ((2) *d* > *t*); however, this would leave the

language with voiced aspirates but no plain voiced stops, also an unnatural arrangement, and so the voiced aspirates would be pulled in to fill the slot of the plain voiced stops ((3) $dh > d$), making a more symmetrical system.

In the push-chain scenario, the voiced aspirates first started to move towards the plain voiced stops, a natural change towards easier articulation ((3) $dh > d$), but the approach of dh into the space of d forced original $*d$ to move towards t ((2) $d > t$), which in turn pushed original $*t$ out in order to maintain a distinction between these series of sounds ((1) $t > \theta$).

(3) The English Great Vowel Shift, mentioned in examples above, is one of the best-known of all chain shifts. Between Chaucer (c. 1400) and Shakespeare (born 1564), English underwent a series of interrelated vowel changes known as the Great Vowel Shift, in which long vowels systematically raised, and the highest long vowels diphthongised, as seen in Figure 2.1.

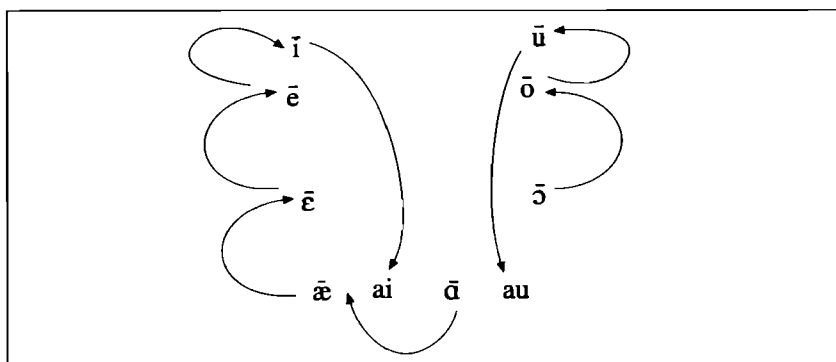


FIGURE 2.1: The Great Vowel Shift in English

These changes are seen in the following words:

<i>Middle English</i>	<i>Chaucer</i>	<i>Shakespeare</i>	<i>Modern English</i>	
bite(n)	/bītə/	/bēit/	/bait/	'bite' (ī > ai)
tide	/tīd/	/tēid/	/taid/	'tide'
bete	/bētə/	/bīt/	/bi(:)t/	'beet' (ē > i)
mete	/mēt/	/mēt/	/mi(:)t/	'meat' (ē > ē > i)
bete 'strike'	/bāet/	/bēt/	/bit/	'beat' (ā > i)
name	/nāmə/	/nām/	/neim/	'name'
hous	/hūs/	/həus/	/haus/	'house' (ū > au)
boote	/bōt/	/būt/	/bu(:)t/	'boot' (ō > u)
boat	/bōt/	/bōt/	/bout/	'boat' (ō > ou)

Sound Change

(4) *Mamean shift*. Chain shifts of various sorts, some more complex, some involving only a couple of changes, are known from many languages, not just Indo-European. One example is the chain shift in Mamean languages (a branch of the Maya family) in which:

*r > t

*t > č

*č > ɟ (a laminal retroflex grooved fricative).

2.9 Exercises

Exercise 2.1 Sound change – Old English to Modern English

Compare the Old English forms with their Modern English counterparts and determine what sound changes the vowels have undergone. (Note that the ‘macron’, as with *ō* and *ā*, indicates vowel length.)

<i>Old English</i>	<i>Modern English</i>	
brōm	/brum/	broom
cōl	/kul/	cool
dōm	/dum/	doom
glōm	/glum/	gloom
gōs	/gus/	goose
stōl	/stul/	stool
tōl	/tul/	tool
tōθ	/tuθ/	tooth
mōna	/mun/	moon
nōna	/nun/	noon
sōna	/sun/	soon
āk	/ouk/	oak
bāt	/bout/	boat
fā	/fou/	foe
gāt	/gout/	goat
hāl	/houl/	whole
hām	/houm/	home
rād	/roud/	road
rāp	/roup/	rope
stān	/stoun/	stone

Exercise 2.2 Sound change – Proto-Germanic to Old English

Compare the Proto-Germanic forms with their descendants in Old English and determine what sound changes have taken place. (Note that *ī*, *ō*, *ū* and *ā* are long vowels.)

Proto-Germanic Old English

*fimf	fīf	five
*gans-	gōs	goose
*grinst	grīst 'a grinding'	grist
*hanh-	hōh	heel, hock
*linθj(az)-	līθe	mild, lithe
*munθ-	mūθ	mouth
*tanθ-	tōθ	tooth
*gang-	gang	a going
*grind-	grind	grind
*hlink-	hlink	ridge, links
*hund-	hund	dog, hound
*land-	land	land
*sing-	sing-	sing
*slink-	slink-	slink
*sundan	sund-	swimming, sea, sound
*sundrō	sunder	apart, asunder
*swing-	swing-	swing
*θingam	θing-	assembly, (legal) case, thing
*wund-	wund	a wound

Exercise 2.3 Sound change – Proto-Germanic to German

Compare the spoken German forms with the Proto-Germanic forms from which they come and attempt to state what sound change or changes have taken place in the initial consonants in these data. Compare the first two columns with one another. Column three (German spelling) is given only for reference for those who may know German.

<i>Proto-Germanic</i>	<i>German</i>	<i>German spelling</i>	<i>gloss</i>
*tīde	tsait	Zeit	time (compare 'tide')
*tōn	tsaun	Zaun	fence (compare 'town')
*timmer	tsīmər	Zimmer	room (compare 'timber')
*tin	tsīn	Zinn	tin

Sound Change

*to	tsu	zu	to
*tonge	tsuŋə	Zunge	tongue
*tol	tsɔl	Zoll	toll
*paθ	pfat	Pfad	path
*plihti-	pfliçt	Pflicht	duty (compare 'plight')
*plug-	pfluk	Pflug	plough
*pund-	pfunt	Pfund	pound

Exercise 2.4 Sound change – Proto-Slavic to Russian

What sound changes that have taken place in Russian since Proto-Slavic times are illustrated in the following data? Write rules to account for the palatalisation of consonants, the change in the stem vowels, loss of vowels, and change in voicing of consonants. More than one change has applied to some forms; for these, state the relative chronology of these changes (the order, temporal sequence) in which the different changes took place. (The breve /' / over vowels means 'short'.)

<i>Proto-Slavic</i>	<i>Russian</i>	<i>'third person masculine past tense'</i>
*greblŭ	grjop	rowed
*metlŭ	mjɔl	swept
*nesŭ	njos	carried
*pjsŭ	pjos	dog
*vedlŭ	vjɔl	lead
*domŭ	dom	house
*grobŭ	grop	grave
*nosŭ	nos	nose
*rodŭ	rot	gender
*volŭ	vol	bull
*dŭnŭ	djenj	day
*konŭ	konj	horse
*vjsŭ	vjesj	all

Exercise 2.5 Sound change – Brule Spanish

Brule Spanish is the dialect of Ascension Parish, Louisiana. Spanish speakers from the Canary Islands settled there in the late 1700s. Compare the Brule Spanish forms in the following data with the corresponding forms in Standard (American) Spanish, written in phonemic notation (standard spelling given in parentheses), which represent the stage from which Brule Spanish began. Determine what sound changes

have taken place in Brule Spanish and write rules to represent them. Do not attempt to determine what happened in cases involving differences in *o/u*, *e/i*, *s/z* or *v/b*. (Based on data from Holloway 1997.)

NOTE: in these data, intervocalic /*r̄*/ is [r] (voiced alveolar trill) and /*r*/ is [ɾ] (voiced alveolar flap/tap); there is no contrast between these sounds initially and finally, and though initial /*r*/ is trilled, it is represented as <*r*> in these data.

Brule Spanish

Standard (American) Spanish

'lalgo	'long'	'largo (largo)
mal'tijo	'hammer'	mar'tijo (martillo)
'valba	'Spanish moss'	'barba (barba) 'beard'
'sjemple	'always'	'sjempre (siempre)
tem'plano	'early'	tem'prano (temprano)
'kwælpō	'body'	'kwerpo (cuerpo)
sæl'vjeta	'table napkin'	ser'bjeta (servieta)
'kwælvō	'crow'	'kwerbo (cuervo)
pæl'sona	'person'	per'sona (persona)
æ'l'mano	'brother'	er'mano (hermano)
'mwæltō	'dead'	'mwerto (muerto)
'naa	'nothing'	'nada (nada)
'too	'all'	'todo (todo)
ve'nao	'deer'	be'nado (venado)
ru'ija	'knee'	ro'dija (rodilla)
pa're	'wall'	pa'red (pared)
'pare	'father'	'padre (padre)
'mare	'mother'	'madre (madre)
'pjera	'stone, rock'	'pjedra (piedra)
ko'mjeno	'eating'	ko'mjendo (comiendo)
'kwano	'when'	'kwando (cuando)
'one	'where'	a'donde (adonde)
kul'tinah	'curtains'	kor'tinas (cortinas)
'gatoḥ	'cats'	'gatos (gatos)
djoh	'God'	djos (Díos)
'nočeh	'nights'	'nočes (noches)
rah'kano	'scratching'	ras'kando (rascando)
ehko'peta	'shotgun'	esko'peta (escopeta)
'kohta	'coast'	'kosta (costa)
peh'kao	'fish'	pes'kado (pescado)

Sound Change

ko'zjeno	'sewing'	ko'sjendo (cosiendo)
u'za	'to use'	u'sar (usar)
ka'miza	'shirt'	ka'misa (camisa)
be'zeño	'calf'	be'seño (becerro)
ka'za	'to marry'	ka'sar (casar(se))
di'sir	'to say'	de'sir (decir)
vih'tir	'to dress'	bes'tir (vestir)
pi'aso	'piece'	pe'daso (pedazo)
ru'ija	'knee'	ro'dija (rodilla)
u'jir	'to hear'	o'ir (oir)
ju'vjeno	'raining'	jo'bjendo (lloviendo)
vih'pero	'beehive'	abis'pero (avispero)
ma'rijo	'yellow'	ama'rijo (amarillo)
ma'ra	'to tie up'	ama'rar (amarrar)
'one	'where'	a'donde (adonde)
'legle	'happy'	a'legre (alegre)
bi'hon	'bumblebee'	abe'xon (abejón)
fei'ta	'to shave'	afei'tar (afeitar)
'vija	'city'	'bija (villa) 'town'

Exercise 2.6 Sound change – Balto-Finnic

Determine what sound changes affecting the vowels have taken place in each language, in Finnish, then in Estonian, then in Livonian. Write the rules which specify these changes and under what conditions they took place. (NOTE: PBF = Proto-Balto-Finnic; ä = [æ], ö = [ø]. Vowels spelled double (for example *aa*, *oo* and so on) are long vowels.)

PBF	Finnish	Estonian	Livonian	gloss
*maa	maa	maa	moo	land
*noori	nuori	noor	nuor ^j	young
*koori	kuori	koor	kuor ^j	bark, peel
*hooli	huoli	hool	uol ^j	care, worry
*jooni	juoni	joon	juon ^j	line, direction
*leemi	liemi	leem	liem	broth
*mees	mies	mees	miez	man
*meeli	mieli	meel	miel ^j	mind
*keeli	kieli	keel	kiel ^j	tongue, language
*reemu	riemu	riim	riim	joy
*meekka	miekka	miikk	miik	sword
*peena	piena	piin	piin	slat, rail

Historical Linguistics: An Introduction

<i>PBF</i>	<i>Finnish</i>	<i>Estonian</i>	<i>Livonian</i>	<i>gloss</i>
*veeras	vieras	viiiras	viiiraz	foreign
*luu	luu	luu	luu	bone
*hiiri	hiiri	hiir	iir	mouse
*kyynel	kyynel	—	kiindjal	tear (noun)
*kyynärä	kyynärä	kyynar	kiindar	ell (measure)
*töö	työ	töö	tie	work
*möö-	myö-	möö-	mie-	along, by
*kala	kala	kala	kala	fish
*lapa	lapa	lapa	laba	wide, flat (place)
*kynä	kynä	kyna	kina	trough/boat/barrel
*ikä	ikä	ika	iga	age
*isä	isä	isa	iza	father
*joki	joki	jiki	jok	river
*kivi	kivi	kivi	kiv	stone
*lumi	lumi	lumi	lum	snow
*läpi	läpi	läpi	läp	through, hole
*suku	suku	suku	suk	family
*kynä	kynä	kyna	kina	trough/boat/barrel
*kylä	kylä	kyla	kila	village
*ilma	ilma	ilm	iilma	world, weather
*jalka	jalka	jalk	jaalga	foot, leg
*kalma	kalma	kalm	kaalma	grave(site)
*nälkä	nälkä	nälk	näälga	hunger
*härkä	härkä	härk	äärga	bull
*silmä	silmä	silm	siilma	eye
*helmi	helmi	helm	eeļm	pearl
*korva	korva	kīrv	kuora	ear
*marja	marja	mari	muorja	berry
*karja	karja	kari	kuorja	cattle
*orja	orja	ori	vuorja	slave
	[Livonian <i>vuorja</i> ‘forked stick to hold a pinewood torch’]			
*kurki	kurki	kurk	kurk	crane
*lintu	lintu	lint	linnt	bird
*hullu	hullu	hull	ull	crazy
*mänty	mänty	mänt	männnt	pine
*synty	synty	synt	(sinnt-)	birth
*hanki	hanki	hank	aņķk	crust of snow

Sound Change

<i>PBF</i>	<i>Finnish</i>	<i>Estonian</i>	<i>Livonian</i>	<i>gloss</i>
*nahka	nahka	nahk	nooga	leather
*lehmä	lehmä	lehm	n ^j eeem	cow
*lehti	lehti	leht	leet ^j	leaf, sheet
*hauta	hauta	haut	ooda	grave
*lauta	lauta	laut	looda	board
*hanki	hanki	hank	a ⁿ ŋk	crust of snow
*hinta	hinta	hint	innda	price
*kanto	kanto	kant	kannt	stump
*into	into	int	innt	passion
*halko	halko	halk	allk	piece/block of wood
*härkä	härkä	härk	äärga	bull
*kylmä	kylmä	kylm	kiilma	cold
*kylki	kylki	kylk	killk	side
*hullu	hullu	hull	ull	crazy
*hiki	hiki	hiki	ik	sweat
*henki	henki	h ⁱ nk	je ⁿ ŋk	breath
*lava	lava	lava	lova	platform, frame
*haava	haava	haav	oov	wound
*hauta	hauta	haut	ooda	grave
*lauta	lauta	laut	looda	board
*kirppu	kirppu	kirpp	—	flea
*verkko	verkko	v ⁱ rkk	v ⁱ rrk	net
*nerkko	nerkko	n ⁱ rkk	n ⁱ rrk	weak
*onsi	onsi	oos	—	a hollow place
*kansi	kansi	kaas	koon ^f	cover
*kynsi	kynsi	kyys	kiin ^f	plough, fingernail
*mesi	mesi	mesi	me ^{3j}	honey
*köysi	köysi	köis	kjeu ^{3j}	rope
*kuusi	kuusi	kuus	kuu ^{3j}	six
*kusi	kusi	kusi	ku ^{3j}	urine
*mato	mato	madu	—	worm
*elo	elo	elu	jel	life/building
*eno	eno	onu	—	uncle
*hako	hako	haku	ak	evergreen sprig/needle
*ilo	ilo	ilu	ila	happy/beauty/character

Historical Linguistics: An Introduction

<i>PBF</i>	<i>Finnish</i>	<i>Estonian</i>	<i>Livonian</i>	<i>gloss</i>
*himo	himo	himu	—	lust, desire
*iho	iho	ihu	—	skin, hide
*kalvo	kalvo	kalu	—	film, coat
*vesa	vesa	visa	viza	sprout
*kerta	kerta	kirt	kiirda	time, shift
*helma	helma	hilm	ilma	skirt, frock
*terva	terva	tirv	tiira	tär
*velka	velka	vilk	vilga	debt
*perna	perna	pirn	piirna	spleen
*leuka	leuka	liuk	liuga	jaw
*neuvo	neuvo	niu	niu	advice
*tosi	tosi	tisi	tuoz ^j	true
*solki	solki	silk	suollk	buckle, brooch
*sormi	sormi	sirm	suorr ^j m	finger
*pohja	pohja	pihi	puoj	bottom, base
*poski	poski	pisk	possk	cheek
*loppu	loppu	lipp	lopp	end
*korpi	korpi	kirp	—	dark woods
*korva	korva	kirv	kuora	ear
*metsä	metsä	mets	metsa	woods
*loppu	loppu	lipp	lopp	end
*leppä	leppä	lepp	leppa	alder
*sota	sota	sita	suoda	war

Borrowing

When a foreign word falls by accident into the fountain of a language, it will get driven around in there until it takes on that language's colour.

(Jakob Grimm)

3.1 Introduction

It is common for one language to take words from another language and make them part of its own vocabulary: these are called *loanwords* and the process is called linguistic *borrowing*. Borrowing, however, is not restricted to just lexical items taken from one language into another; any linguistic material – sounds, phonological rules, grammatical morphemes, syntactic patterns, semantic associations, discourse strategies or whatever – which has its origin in a foreign language can be borrowed, that is, can be taken over so that it becomes part of the borrowing language. Borrowing normally implies a certain degree of bilingualism for at least some people in both the language which borrows (sometimes called the *recipient* language) and the language which is borrowed from (often called the *donor* language). In this chapter, we are concerned with answering the questions: (1) what are loanwords?; (2) why are words borrowed?; (3) what aspects of language can be borrowed and how are they borrowed?; (4) what are the methods for determining that something is a loanword and for identifying the source languages from which words are borrowed?; and (5) what happens to borrowed forms when they are taken into another language? (Other aspects of linguistic borrowing are treated in Chapter 9 on syntactic change and in Chapter 12 on areal linguistics.)

3.2 What is a Loanword?

A loanword is a lexical item (a word) which has been 'borrowed' from another language, a word which originally was not part of the vocabulary of the recipient language but was adopted from some other language and made part of the borrowing language's vocabulary. For example, Old English did not have the word *pork*; this became an English word only after it was adopted from French *porc* 'pig, pork', borrowed in the late Middle English period – so we say, as a consequence, that *pork* is a French loanword in English. French has also borrowed words from English, for example *bifteck* 'beefsteak', among many others. Loanwords are extremely common; some languages have many. There are extensive studies of the many Scandinavian and French loans in English; Germanic and Baltic loans in Finnish; Basque, German and Arabic loans in Spanish; Native American loanwords in Spanish and Spanish loans in various Native American languages (called *hispanisms*); Turkic in Hungarian; English in Japanese; Sanskrit in Malay and other languages of Indonesia; Arabic in various languages of Africa and Asia; and so on, to mention just a few cases which have been studied intensively.

A quick glance at the contents of our kitchen pantry will begin to give us an appreciation for the impact of loanwords on English vocabulary:

catsup, ketchup < apparently originally from the Amoy dialect of Chinese *kôe-chiap*, *kè-tsiap* 'brine of pickled fish or shellfish', borrowed into Malay as *kêchap*, taken by Dutch as *ketjap*, the probable source from which English acquired the term.

chocolate < Nahuatl (Mexico, the language of the Aztecs) *çokolatl* 'a drink made from the seeds of the cacao tree', borrowed as Spanish *chocolate* from which other languages of the world obtained the term.

coffee < Arabic *qahwah* 'infusion, beverage', originally said to have meant some kind of 'wine', borrowed through the Turkish pronunciation *kahveh* from which European languages get their term.

Coca-Cola < *coca* < Quechua *kuka* 'coca leaves, coca bush', borrowed via Spanish *coca* + *cola* < languages of west Africa *kola* 'cola nut'.

flour < Old French *flour* 'flower' (compare French *fleur de farine* 'flower of meal/flour', that is, the 'best or finest of the ground meal').

juice < French *jus* 'broth, sauce, juice of plant or animal'.

pantry < Old French *paneterie* 'bread-room, bread-closet', based on Latin *pānis* 'bread'.

pepper < ultimately of ancient oriental origin (compare Sanskrit

Borrowing

pippalī 'long pepper'); it came early to Germanic peoples via Latin *piper*.

potato < Taino (Cariban language of Haiti) *patata*, borrowed through Spanish *batata*, *patata* to many other languages.

rice < ultimately from Dravidian **ari/*ariki* 'rice, paddy' (compare Tamil *ari/ari-ci*), via Latin *oriza* and Greek *orúza*.

spaghetti < Italian *spaghetti*, plural of *spaghetto* 'small thread', the diminutive of *spago* 'string, twine'.

sugar < ultimately from Arabic *sukkar*, through Old French *çucré*.

tea < ultimately from Chinese (compare Amoy dialect *te*), probably borrowed through Malay *te/teh* into Dutch and from Dutch to English.

tomato < Nahuatl *tomatl*, through Spanish *tomate*.

These are but a few of the borrowed forms among English foodstuffs.

3.3 Why do Languages Borrow from One Another?

Languages borrow words from other languages primarily because of *need* and *prestige*. When speakers of a language acquire some new item or concept from abroad, they *need* a new term to go along with the new acquisition; often a foreign name is borrowed along with the new concept. This explains, for example, why so many languages have similar words for 'automobile' (as in Russian *avtomobil*¹, Finnish *auto*, Swedish *bil* – from the last syllable of *automobil*); 'coffee' (Russian *kofe*, Finnish *kahvi*, Japanese *kōhii*); 'tobacco' (Finnish *tupakka*, Indonesian *tembakau* [təmbakau], Japanese *tabako* 'cigarette, tobacco', ultimately from Arabic *tabāq* 'a herb which produced euphoria' via Spanish *tabaco*); and *Coca-Cola*, for example, since languages presumably needed new names for these new concepts when they were acquired.

The other main reason why words are taken over from another language is for *prestige*, because the foreign term for some reason is highly esteemed. Borrowings for prestige are sometimes called 'luxury' loans. For example, English could have done perfectly well with only native terms for 'pig flesh/pig meat' and 'cow flesh/cow meat', but for reasons of prestige, *pork* (from French *porc*) and *beef* (from French *bœuf*) were borrowed, as well as many other terms of 'cuisine' from French – *cuisine* itself is from French *cuisine* 'kitchen' – because French had more social status and was considered more prestigious than English during the period of Norman French dominance in England (1066–1300). For example, Votyak (a Finno-Ugric language) borrowed from Tatar (a Turkic language) words for such things as 'mother', 'father', 'grandmother',

'grandfather', 'husband', 'older brother', 'older sister', 'uncle', 'human', among other things. Since Votyak had native terms for 'father' and 'mother' and these other kin before contact with Tatar, need was not the motivation for these borrowings, rather prestige. Similarly, Finnish borrowed words for 'mother' (*äiti*, from Germanic; compare Gothic *aipei* [ēþī], Old High German *eidī*, Proto-Germanic **aiθī*); 'daughter' (*tytär*, from Baltic; compare Lithuanian *duktėr̃s* (genitive form)); 'sister' (*sisar*, from Baltic; compare Lithuanian *sesẽr̃s* (genitive form)); and 'bride', 'navel', 'neck', 'thigh' and 'tooth', among many others from Baltic and Germanic (compare Anttila 1989: 155). Clearly, Finnish had previously had terms for close female kin and for these body parts before borrowing these terms from neighbouring Indo-European languages, and thus it is prestige which accounts for these borrowings and not need.

Some loans involve a third, much rarer (and much less important) reason for borrowing, the opposite of prestige: borrowing due to negative evaluation, the adoption of the foreign word to be *derogatory*. Here are a few examples, all borrowed presumably for derogatory reasons. French *hâbler* 'to brag, to romance' is borrowed from Spanish *hablar* 'to speak'. Finnish *koni* 'nag' [old horse], with negative connotations, is borrowed from Russian *kon'*, a neutral term for 'horse', with no negative connotations in the donor language. English *assassin* and the similar words with the same meaning in a number of other European languages (see French *assassin*, Italian *assassino*, Spanish *asesino* 'assassin') may be another example; *assassin* is ultimately from Arabic *ḥaffāṣīn* 'hashish-eater' (for the name of an eleventh-century Muslim sect who would intoxicate themselves with hashish or cannabis when preparing to kill someone of public standing; they had a reputation for butchering opponents, hence the later sense of 'murderer for hire or for fanatical reasons'). Korean *hōstis*, borrowed from English *hostess*, has a negative connotation, meaning the women who work at nightclubs and bars which serve mainly male customers. It is possible, of course, that some examples of this sort were not borrowed with derogatory purposes in mind at all, but rather merely involve things which have low status.

3.4 How do Words get Borrowed?

Borrowed words are usually remodelled to fit the phonological and morphological structure of the borrowing language, at least in early stages of language contact. The traditional view of how words get borrowed and what happens to them as they are assimilated into the borrowing language holds that loanwords which are introduced to the

borrowing language by bilinguals may contain sounds which are foreign to the receiving language, but due to *phonetic interference* the foreign sounds are changed to conform to native sounds and phonetic constraints. This is frequently called *adaptation* (or *phoneme substitution*). In adaptation, a foreign sound in borrowed words which does not exist in the receiving language will be replaced by the nearest phonetic equivalent to it in the borrowing language. For example, formerly Finnish had no voiced stops *b*, *d*, *g*; in loans borrowed into Finnish from Germanic languages which contained *b*, *d*, *g*, voiceless stops (*p*, *t*, *k*), the closest phonetic counterparts in Finnish, replaced these sounds, as seen in, for example, *parta* 'beard' (from Germanic **bardaz*) and *kaasu* 'gas' (from Germanic, compare English *gas*). Similarly, in Sayula Popoluca (a Mixe-Zoquean language of southern Mexico), which had no native *l* or *r*, the foreign *l* and *r* of borrowed words were replaced by native *n*, as in Sayula Popoluca *kúnu:f* 'cross', borrowed from Spanish *cruz* [krus], *mu:na* 'mule' from Spanish *mula*, and *puná:tu* 'plate, dish' from Spanish *plato*. Occasionally in borrowings, substitutions may spread the phonetic features of a single sound of the donor language across two segments in the borrowing language; for example, Finnish had no *f*, so intervocalic *f* in loanwords was replaced by the sequence *hv*, as in *kahvi* 'coffee' (from Swedish *kaffe*), *pahvi* 'cardboard' (from Swedish *paff*) and *pihvi* 'beef' (from English *beef*). In this instance, some of the features of foreign *f* are represented on the first segment – *h* conveys 'voiceless' – and other features on the second segment – *v* conveys 'labiodental' – and both *h* and *v* signal 'fricative'.

Non-native phonological patterns are also subject to *accommodation*, where loanwords which do not conform to native phonological patterns are modified to fit the phonological combinations which are permitted in the borrowing language. This is usually accomplished by deletion, addition or recombination of certain sounds to fit the structure of the borrowing language. For example, Mayan languages do not permit initial consonant clusters, and consequently Spanish *cruz* /krus/ 'cross' was borrowed as *rus* in Chol (Mayan), where the initial consonant of the donor form was simply left out, and as *kurus* in Tzotzil (another Mayan language), where the consonant cluster has been broken up by the insertion of a vowel between *k* and *r*. Similarly, in the Sayula Popoluca example above, since the language did not have initial consonant clusters, the *kr* and *pl* of Spanish were broken up by the insertion of *u* in, for example, *kúnu:f* 'cross' (< Spanish *cruz*, just mentioned) and *puná:tu* 'plate' (< Spanish *plato*). Similarly, Finnish, with no initial consonant clusters in native words, eliminated all but the last consonant of initial

consonant clusters in loanwords, for example *Ranska* 'French' (< Swedish *Franska* 'French'), *risti* 'cross' (< Old Russian *kristĭ*), *ruuvi* 'screw' (< Swedish *skruv* 'screw').

However, there are many different kinds of language-contact situations, and the outcome of borrowing can vary according to the length and intensity of the contact, the kind of interaction, and the degree of bilingualism in the populations. In situations of more extensive, long-term or intimate contact, new phonemes can be introduced into the borrowing language together with borrowed words which contain these new sounds, resulting in changes in the phonemic inventory of the borrowing language; this is sometimes called *direct phonological diffusion*. For example, before intensive contact with French, English had no phonemic /ʒ/. This sound became an English phoneme through the many French loans that contained it which came into English, such as *rouge* /ruʒ/ (< French *rouge* 'red') (and added to by the palatalisation in the eighteenth century of /zj/ > /ʒ/, as in *vision*, *Asia* and so on). In the case of *v*, formerly English had an allophonic [v] but no phonemic /v/. It became phonemic due in part to French loans containing *v* in environments not formerly permitted by English. The sound [v] occurred in native English words only as the intervocalic variant (allophone) of /f/; a remnant of this situation is still seen in alternations such as *leaf-leaves*, *wife-wives* and so on, where the suffix *-es* used to have a vowel in the spoken language. Words with initial *v* of French origin – such as *very* from French *vrai* 'true' – caused /v/ to become a separate phoneme in its own right, no longer just the allophonic variant of /f/ that occurred between vowels. The phonological patterns (phonotactics, syllable or morpheme structure) of a language can also be altered by the acceptance in more intimate language contact of loans which do not conform to native patterns. For example, while native Finnish words permit no initial consonant clusters, now through intimate contact and the introduction of many borrowings from other languages, especially from Swedish and later from English, Finnish phonology permits loans with initial clusters, as seen in, for example, *krokotiili* 'crocodile', *kruunu* 'crown' (compare Swedish *krona*), *presidentti* 'president' and *smaragdi* 'emerald' (from Swedish *smaragd*), and so on.

While there may be typical patterns of substitution for foreign sounds and phonological patterns, substitutions in borrowed words in a language are not always uniform. The same foreign sound or pattern can be borrowed in one loanword in one way and in another loanword in a different way. This happens for the following reasons. (1) Sometimes different words are borrowed at different times, so that older loans

reflect sound substitutions before intimate contact brought new sounds and patterns into the borrowing language, while more recent borrowings may exhibit the newer segments or patterns acquired after more intensive contact. (The extent to which the source language is known by speakers of the borrowing language is relevant here.) An example is Sayula Popoluca *туру* 'bull' (recently from Spanish *toro*), with *r*, where earlier loans would have substituted *n* for this foreign sound (mentioned above). Another example is seen in the comparison of Tzotzil (Mayan) *pulatu* 'dishes' (from Spanish *plato* 'plate, dish'), borrowed earlier when Tzotzil permitted no initial consonant clusters, and Tzotzil *platu* 'plate', borrowed later from the same Spanish source, now containing the initial consonant cluster which was formerly prohibited. (2) In most cases, borrowings are based on pronunciation, as illustrated in the case of Finnish *meikkaa*- 'to make up (apply cosmetics)', based on English pronunciation of *make* /meik/. However, in some cases, loans can be based on orthography ('spelling pronunciations'), as seen in the case of Finnish *jeeppi* [je:p:i] 'jeep', which can only be based on a spelling pronunciation of English 'jeep', not on the English pronunciation (/ʃip/) – borrowed nouns that end in a consonant add *i* in Finnish.

Loan words are not only remodelled to accommodate aspects of the phonology of the borrowing language, they are also usually adapted to fit the morphological patterns of the borrowing language. For example, Spanish and French borrowings into Arabic have been made to fit Arabic morphological paradigms, which involve alternations in the vowels of the root to signal different morphemes, such as 'singular' and 'plural' difference, as in:

resibo 'receipt' (singular), but *ruāseb* (plural) < Spanish *recibo*
bābor 'a steamship, steamer', but plural *buāber* < Spanish *vapor*
 /bapor/ (see Vendryes 1968: 95).

Chiricahua Apache often has verbs where European languages have adjectives, and as a consequence the Spanish adjectives *loco* 'crazy' and *rico* 'rich' were borrowed but adapted to the verb paradigm, as in:

<i>lô:gò</i> 'he/she is crazy'	<i>ʒî:gò</i> 'he/she is rich'
<i>lô:ʒgò</i> 'I am crazy'	<i>ʒî:ʒgò</i> 'I am rich'
<i>lón̄gò</i> 'you are crazy'	<i>ʒín̄gò</i> 'you are rich'

Here, as might be expected, it is the third person verb form ('he is crazy/rich') which phonetically matches the form of the original Spanish adjectives most closely (where *ʒ* is the closest substitution for Spanish *r*, which Apache lacked; the diacritics on the vowels indicate

tones and are required by Chiricahua Apache for verbs such as these. (See Anttila 1989: 158.)

3.5 How do We Identify Loanwords and Determine the Direction of Borrowing?

An important question is: how can we tell (beyond the truly obvious cases) if something is a loanword or not? In dealing with borrowings, we want to ascertain which language is the source (donor) and which the recipient (borrower). The following criteria (perhaps better called rough rules of thumb) address these questions (compare Haas 1969a: 79; Sapir 1949).

3.5.1 Phonological clues

The strongest evidence for loanword identification and the direction of borrowing comes from phonological criteria.

(1) Phonological patterns of the language. Words containing sounds which are not normally expected in native words are candidates for loans. For example, in the Chiricahua Apache example just mentioned, the fact that *ʒi:gò* 'he is rich' has an initial *ʒ* and that *lô:gò* 'he is crazy' has an initial *l* makes these strong candidates for loans, since neither *ʒ* nor *l* occurs word-initially in native words. In another example, native Nahuatl words are not expected to begin with *p*, since Proto-Uto-Aztecan initial **p-* was lost through regular sound change in Nahuatl (**p > h > Ø*, for example Proto-Uto-Aztecan **pa:-* > Nahuatl *a:-* 'water'). For this reason, Nahuatl roots such as *petla-* 'woven mat', *poč:o-* 'silk-cotton tree (ceiba)' and *pak-/pa?-* 'to cure'/'medicine' violate expectations for sounds in native forms, making them candidates for possible loans. On further investigation, the sources of these borrowings are found in neighbouring languages: *petla-* comes from Mixe-Zoquean **pata* 'woven mat' (in other words of Nahuatl, *a > e* in this environment, and *t > tl* before *a*); *poč:o-* is from Totonac *pu:ču:t* 'silk-cotton tree (ceiba)'; *pak-/pa?-* is from Totonac *pa?k* 'to cure, get well'. It is the aberrant initial *p-* of these forms which suggests that they may be loans and which prods us to look for their sources in neighbouring languages.

Words which violate the typical phonological patterns (canonical forms, morpheme structure, syllable structure, phonotactics) of a language are likely to be loans. For example, Mayan languages typically have monosyllabic roots (of the form CVC); the polysyllabic morphemes

found in Mayan languages, which violate the typical monosyllabic pattern, turn out mostly to be loanwords or compounds. For example, the polysyllabic monomorphemic *tinamit* 'town' of Kaqchikel (Mayan) is a loanword from Nahuatl (Uto-Aztecan). Since this polysyllabic form violates the typical monosyllabic structure of Mayan roots, the inference is that it is probably a loan, and indeed its source is found in Nahuatl *tena:mi-tl* 'fence or wall of a town/city', 'fortified town'.

(2) Phonological history. In some cases where the phonological history of the languages of a family is known, information concerning the sound changes that they have undergone can be helpful for determining loans, the direction of borrowing, and what the donor language was. For example, in the Mayan family, a number of languages have borrowed from Cholan (also Mayan), since Cholan speakers were the principal bearers of Classical Maya civilisation. Cholan, however, has undergone a number of sound changes which languages of the other branches of the family did not, and this makes it fairly easy to identify many of these Cholan loans. For example, Cholan underwent the sound change **o: > u*. Yucatec did not undergo this sound change, although some borrowings from Cholan into Yucatec show the results of this Cholan change; for example, Yucatec *kùts* 'turkey' < Cholan *kuts* (from **ko:ts*); Yucatec *tù:n* 'stone, year, stela (monument)' < Chol *tun* 'stone' (compare Proto-Mayan **to:ŋ* 'stone'). Since these words in Yucatec show the results of a sound change that took place in Cholan but which native Yucatec words did not undergo, it is clear in these cases that Yucatec borrowed the words and Cholan is the donor language (Justeson et al. 1985: 14).

3.5.2 Morphological complexity

The morphological make-up of words can help determine the direction of borrowing. In cases of borrowing, when the form in question in one language is morphologically complex (composed of two or more morphemes) or has an etymology which is morphologically complex, but the form in the other languages has no morphological analysis, then usually the donor language is the one with the morphologically complex form and the borrower is the one with the monomorphemic form. For example, English *alligator* is borrowed from Spanish *el lagarto* 'the alligator'; since it is monomorphemic in English, but based on two morphemes in Spanish, *el* 'the' + *lagarto* 'alligator', the direction of borrowing must be from Spanish to English. *Vinegar* in English is a loan from French *vinaigre*, which is from *vin* 'wine' + *aigre* 'sour'; since its etymology is polymorphemic in French but monomorphemic in English,

the direction of borrowing is clearly from French to English. English *aardvark* turns out to be borrowed from Afrikaans *aardvark* (composed of *aard* 'earth + *vark* 'pig'), since the Afrikaans form has a morphologically complex etymology while the English form is monomorphemic. American English *hoosegow* 'jail' is borrowed from Spanish *juzg-ado* 'courtroom, panel of judges' (literally 'judged'), which is composed of two morphemes (*juzga-* 'judge' + *-(a)do* 'past participle', pronounced without *-d-* in many Spanish dialects, [xusgao]), whereas the English form is a single morpheme. French *vasistas* [vazistas] 'fan-light, ventilator' is a loan based on German *was ist das* 'what is that?'; given that the German source has three morphemes (words) but the French word only one, German is the donor.

Spanish borrowed many words from Arabic during the period that the Moors dominated Spain (901–1492). Many Arabic loans in Spanish include what was originally the Arabic definite article *al-* but are monomorphemic in Spanish. A few examples of this are: *albañil* 'mason' (Arabic *bannâ*), *albaricoque* 'apricot' (Arabic *barqûq*), *albóndiga* 'meat ball' (Arabic *bûnduqa* 'ball'), *alcalde* 'mayor' (compare Arabic *qâdî* 'judge'), *alcoba* 'bedroom, alcove' (Arabic *qobbah* 'vault, vaulted chamber'), *alcohol* 'alcohol' (Arabic *koḥl* 'collyrium, fine powder used to stain the eyelids'), *alfalfa* 'alfalfa' (Arabic *faṣfaṣa* 'the best sort of fodder', itself a loan from Persian *aspest*), *algodón* 'cotton' (Arabic *quṭn* 'cotton'; English *cotton* is also ultimately from Arabic), *alguacil* 'constable, bailiff, peace officer' (Arabic *wazr* 'minister, vizier', also the source of English *vizier*), *almacén* 'storehouse' (Arabic *maḥazîn* 'granary, storehouse [plural]', derived from *maḥazan* [singular]; English *magazine* is ultimately from the same source), *almohada* 'pillow' (Arabic *miḥadda*, derived from *ḥadda* 'cheek'). Since these are polymorphemic in Arabic, composed of the article *al-* + root, but each is monomorphemic in Spanish, the direction of borrowing is seen to be from Arabic to Spanish.

Frequently, the early loans from Spanish into Native American languages (called *hispanisms*) were based on the Spanish plural forms. A few examples are: Jakalteko *kaplaf* 'goat' (< Spanish *cabras* 'goats'); Huastec *pa:tuf*, Tzotzil *patof* (< *patos* 'ducks'), K'iche' *pataf* (< Spanish *patas* 'female ducks') 'duck'; Motocintlec *ko:lif* 'cabbage' (< *coles* 'cabbages', compare *col* 'cabbage'); Chol *wakaf* 'bull, cow', Tojolabal *wakaf* 'cattle, beef' (< *vacas* 'cows'). In sixteenth-century Spanish, the sound represented orthographically as *s* was phonetically [ʃ], an apico-alveolar fricative; it was taken by speakers of these languages as being phonetically closer to their /ʃ/ than to their /s/, which accounts for

the /f/ seen in these (monomorphemic) borrowings which corresponds to the (polymorphemic) Spanish plural, *-(e)s*.

The Sanskrit word **kaṇa* 'one-eyed' appears to be borrowed from Proto-Dravidian **kaṇ* 'eye' + **-a* 'negative suffix' (Zvelebil 1990: 79), and it is the morphological complexity of the Dravidian form which shows the direction of the borrowing.

This is a very strong criterion, but not foolproof. It can be complicated by cases of folk etymology (see Chapter 4), where a monomorphemic loanword comes to be interpreted as containing more than one morpheme, though originally this was not the case. For example, Old French monomorphemic *crevice* 'crayfish' was borrowed into English and then later this was replaced by folk etymology with *crayfish*, on analogy with *fish*. Now it appears to have a complex morphological analysis, but this is not original.

3.5.3 Clues from cognates

When a word in two (or more) languages is suspected of being borrowed, if it has legitimate cognates (with regular sound correspondences) across sister languages of one family, but is found in only one language (or a few languages) of another family, then the donor language is usually one of the languages for which the form in question has cognates in the related languages. For example, Finnish *tytär* 'daughter' has no cognates in the other branches of the Finno-Ugric family, while cognates of Proto-Indo-European **dhug(h)ətər* 'daughter' are known from most Indo-European languages, including ones as geographically far apart as Sanskrit and English. Therefore, the direction of borrowing is from one of these Indo-European languages to Finnish. Spanish *ganso* 'goose' is borrowed from Germanic **gans*; Germanic has cognates, for example German *Gans*, English *goose*, and so on, but other Romance languages have no true cognate of Spanish *ganso*. Rather, they have such things as French *oie*, Italian *oca*, and others reflecting Latin *ānser* 'goose' (which is cognate with Germanic **gans* 'goose', but not the source of borrowed Spanish *ganso*). Thus, the direction of borrowing is from Germanic to Spanish. (Ultimately, Germanic **gans* and Latin *ānser* are cognates, but that does not affect the example of Spanish *ganso* as a loan from German.) In another example, the Proto-Mixe-Zoquean word **tsiku* 'coati-mundi' has cognates throughout the languages of the family; in the Mixe branch of the family, due to sound changes, the cognates reflect **čik*. On the other hand, in the Mayan family (of thirty-one languages in Mexico and Guatemala), essentially only

Yucatecan has the form *çi?k* for 'coati-mundi'; the other Mayan languages have native words **ts'uts'*, **si:s* or **kohtom* for 'coati-mundi'. From the general distribution of cognate forms in Mixe-Zoquean, it is concluded that Yucatecan borrowed the word from Mixe-Zoquean, and from its phonological shape, it appears that Yucatecan took the word more directly from the Mixean branch of that family (Justeson et al. 1985: 24).

3.5.4 Geographical and ecological clues

The geographical and ecological associations of words suspected of being loans can often provide information helpful to determining whether they are borrowed and what the identity of the donor language is. For example, the geographical and ecological remoteness from earlier English-speaking territory of *zebra*, *gnu*, *impala* and *aardvark* – animals originally found only in Africa – makes these words likely candidates for loanwords in English. Indeed, they were borrowed from local languages in Africa with which speakers of European languages came into contact when they entered the habitats where these animals are found – *zebra* is from a Congo language (borrowed through French), *gnu* from a Khoe language, *impala* from Zulu, and *aardvark* from Afrikaans.

It is known that Nahuatl (the language of the Aztecs and Toltecs) started out in the region of north-western Mexico and the south-western USA and migrated from there into central Mexico and on to Central America. Since cacao (the source of chocolate, cocoa) did not grow in the original Nahuatl desert homeland, the Nahuatl word *kakawa* 'cacao' is likely to be a loan. Indeed, it was borrowed from Mixe-Zoquean (Proto-Mixe-Zoquean **kakawa* 'cacao'). Several other loans in Nahuatl reflect the adoption of names for plants and animals not encountered before the migration into lower Mexico, where heretofore unknown items indigenous to the more tropical climate were encountered. In Nez Perce (a Sahaptian language of the north-western USA), *lapatá:t* 'potato' is borrowed from Canadian French *la patate*; it is clearly a loan and clearly from French, not only because it is morphologically analysable in French but not in Nez Perce, but also because we know that potatoes were introduced to this area after European contact (Callaghan and Gamble 1997: 111). Knowledge of this history suggests that the term for them could be a borrowing. Further investigation shows this to be the case, a borrowing from French into Nez Perce in this case.

Inferences from geography and ecology are not as strong as those from the phonological and morphological criteria mentioned above;

Borrowing

however, when coupled with other information, the inferences which they provide can be useful.

3.5.5 Other semantic clues

A still weaker kind of inference, related to the last criterion, can sometimes be obtained from the semantic domain of a suspected loan. For example, English words such as *squaw*, *papoose*, *powwow*, *tomahawk*, *wickiup* and so on have paraphrases involving 'Indian'/'Native American', that is, 'Indian woman', 'Indian baby', 'Indian house' and so on; this suggests possible borrowing from American Indian languages. Upon further investigation, this supposition proves true; these are borrowed from Algonquian languages into English. In another example, in Xincan (a small family of four languages in Guatemala) most terms for cultivated plants are known to be borrowed from Mayan; this being the case, any additional terms in this semantic domain that we encounter may be suspected of being possible borrowings. This criterion is only a rough indication of possibilities. Sources for the borrowing must still be sought, and it is necessary to try to determine the exact nature of the loans, if indeed borrowings are involved.

3.6 Loans as Clues to Linguistic Changes in the Past

Evidence preserved in loanwords may help to document older stages of a language before later changes took place. An often-cited example is that of early Germanic loans in Finnish which document older stages in the development of Germanic. These loans bear evidence of things in Germanic which can be reconstructed only with difficulty from the evidence retained in the Germanic languages themselves – some of these reconstructed things are confirmed only through comparisons of Germanic with other branches of Indo-European. For example, Finnish *rengas* 'ring' (borrowed; see Proto-Germanic **hrens-az*) reveals two things about Germanic. First, it documents Germanic at the stage before the sound change of *e* to *i* before *n* (*e* > *i* / __ *n*) – all attested Germanic languages show only the forms with *i*, the result after the change, as in English *ring*. A comparison of Finnish *rengas* and *kuningas* 'king' (also borrowed from Germanic, Proto-Germanic **kuning-az*) shows that Germanic originally contrasted *i* and *e* in the position before *n*, which is not seen in Germanic after the two sounds merged before *n*. Second, both these loans document the Proto-Germanic ending **-az*, suggested

by comparative Germanic evidence (but lost in most Germanic languages, seen as *-s* in Gothic). It is only by confirming **-az* through comparisons from other branches of Indo-European (compare the cognates, Latin *-us* and Greek *-os* 'nominative singular') and from borrowings such as these from earlier Germanic into Finnish that we can be certain of the reconstruction. In another case, some loans in Finnish document Germanic before the umlaut change took place. For example, Finnish *patja* 'mattress' (borrowed from Germanic; see Proto-Germanic **badja* 'bed') documents Germanic before umlaut in which *a* > *e* when followed in the next syllable by *j* or *i* (as seen in English *bed*, German *Bett* – later the **-ja* was lost through a series of changes, **badja* > *bedja* > *bed*). The pre-umlaut stage can be reconstructed from other considerations, in particular in comparisons with cognate words from related languages outside of the Germanic branch of Indo-European. In the umlaut context, modern Germanic languages preserve only words which have undergone the change; Gothic is the only Germanic language which did not undergo umlaut. Another loanword in Finnish, *airo* 'oar', preserves evidence of another suffix which is difficult to reconstruct, the Proto-Germanic feminine ending **-ō* (compare Gothic *-a*, Proto-Scandinavian **-u*) (Krause 1968: 53). The loans which bear evidence of the earlier forms before the changes took place, such as these examples from Finnish, help to confirm the accuracy of the reconstructions.

In another example, Spanish used to contrast bilabial stop *b* and fricative *v*, although these are fully merged in modern Spanish (though still spelled differently, <*b*> and <*v*>, which are no longer distinct phonemes). The stop *b* came from Latin initial *b* and intervocalic *p*, whereas fricative *v* came from late Latin initial *v* and from intervocalic *v* and *b*; these two phonemes, /*b*/ and /*v*/, merged in Spanish to the single /*b*/ of modern Spanish. However, early loanwords from Spanish into American Indian languages (hispanisms) show clearly that the contrast persisted at least long enough to arrive in America, although soon afterwards the merger took place and later hispanisms reflect only the merged sound. In the early hispanisms, /*v*/ was borrowed typically as *w*, since most Native American languages lacked *v* (*w* being their sound which is nearest phonetically to *v*), whereas the /*b*/ of earlier Spanish was borrowed as /*b*/, /*β*/ or /*p*/, depending on the sounds available in the particular borrowing language which could be considered the closest phonetic equivalent to Spanish *b* in each recipient language. The following are a few early hispanisms in Mayan languages which show the earlier contrast in Spanish before these sounds later merged. Forms 1–3 show original intervocalic /*b*/ (borrowed as *p*, *b* or *f*):

Borrowing

1. Spanish *jabón* 'soap' (phonetically [ʃabón] in the sixteenth century), borrowed as: Chol *ʃapum*, Huastec *ʃabu:n*, Q'anjobal *ʃapon*, Motocintlec *ʃa:puh*, K'iche' *ʃbon*, Tzeltal *ʃapon*.
2. Spanish *nabo* 'turnip': K'iche' *napuʃ*, Tzotzil *napuʃ* (< *nabos* 'turnips', borrowed from the Spanish plural form).
3. Spanish *sebo* 'tallow, grease': Q'anjobal *ʃepuʔ*, K'iche' *ʃepu*, Tzotzil *ʃepu*.

Forms 4–6 show original intervocalic /v/ (borrowed as *w* or *v*):

4. *navaja* 'knife, razor': Akateko *nawaʃ*, Chol *ñawafaf*, Q'anjobal *nawuʃ*, Tzotzil *navaʃaf* (< *navajas*, 'plural' form).
5. *clavo* 'nail': Akateko *lawuʃ*, Chol *lawuʃ*, K'iche' *klawuʃ*, Tzeltal *lawuʃ*, Tojolabal *lawuʃ* ('nail', 'spur'), Tzotzil *lavuʃ* (< *clavos*, borrowed from the plural form).
6. Old Spanish *cavallo* < Latin *cavallus* 'work horse': Akateko *kawayú* 'horse, beast of burden', Chol *kawayu*, Q'anjobal *kawayo*, Q'eqchi' *kawa:y*, Motocintlec *kwa:yuh* 'horse, mule', Tzeltal *kawu*, Tzotzil *kawayú* 'beast of burden'.

These loans demonstrate (1) the phonetic nature of original sounds, (2) the time when the sounds merged, and (3) the fact that this merger of /b/ and /v/ had not yet taken place in the mid-sixteenth century when these languages began to borrow from Spanish.

Evidence from loanwords can also sometimes contribute to understanding the *relative chronology* of changes in a language (introduced in Chapter 2, and discussed again in Chapters 5 and 8). For example, Motocintlec (Mayan, of the Q'anjobalan branch) *čo:ŋ* 'to sell' is borrowed from Cholan (a different branch of Mayan) *čon* (compare Proto-Mayan **ko:ŋ*). (Recall that Cholan was the principal language of Classical Maya civilisation, and as such contributed numerous loans to languages of the region.) We know that Cholan underwent two changes: **k* > *č* and **ŋ* > *n*, though both **k* and **ŋ* remain unchanged in Motocintlec (as seen, for example, in *koŋob* 'market', which retains the native form, from **koŋ* 'to sell' + *-ob* 'place of, instrumental suffix'). Therefore, loanwords of Cholan origin such as Motocintlec *čo:ŋ* reveal that in Cholan the change of **k* > *č* took place earlier than the change of **ŋ* > *n*, since from the form of the loan in Motocintlec we conclude that Motocintlec borrowed *čo:ŋ* at the stage when **k* > *č* had already taken place in Cholan, but before Cholan had undergone the change of **ŋ* > *n*. Thus loans such as this one reveal the relative chronology of Cholan changes, first **k* > *č*, followed later by **ŋ* > *n*.

3.7 What Can Be Borrowed?

Not only can words be borrowed, but sounds, phonological features, morphology, syntactic constructions and in fact virtually any aspect of language can be borrowed, given enough time and the appropriate sorts of contact situations. Let's look at a few examples of non-lexical borrowings.

3.7.1 Borrowed sounds or features used in native lexical items

Foreign sounds can be borrowed – that is, speakers of one language can borrow sounds from another language with which they are familiar. There are two main ways in which non-native sounds can end up in native words: through areal diffusion (see Chapter 12) and through onomatopoeia and expressive symbolism.

Through intense long-term contact, foreign sounds can be borrowed and come to occur in native words. A few examples are: the clicks borrowed from so-called Khoisan languages (Khoe and San languages) of southern Africa into some neighbouring Bantu languages (for example, Xhosa, Zulu, Sotho; Proto-Bantu had no clicks); glottalised consonants borrowed into Ossetic and Eastern Armenian from neighbouring languages of the Caucasus linguistic area; and the retroflex consonants of Indo-Aryan languages, which owe their origin, at least in part, to contact with Dravidian languages in the South Asian (Indian) linguistic area (see Chapter 12; Campbell 1976).

Expressive symbolism is the use of certain phonetic traits to symbolise affectations, heightened expressive value, or the speaker's attitude. An example of a foreign sound which has been extended into native words through onomatopoeia and affective symbolism is the *r* of Chol and Tzotzil (two Mayan languages). Before contact with Spanish, these languages had no *r*; this sound was introduced through Spanish loanwords which contained it, for example Chol *arus* 'rice' < Spanish *arroz* /aros/, and Tzotzil *martoma* 'custodian' < Spanish *mayordomo*. After *r* was introduced in loanwords, this new sound – which apparently seemed exotic to the speakers of these Mayan languages – came to be employed in certain native words for onomatopoeic or expressive purposes, for example, Chol *buruk-ña* 'buzzing, humming', *burbur-ña* 'noisily', *porok-ña* 'breathing when there is an obstruction', *sorok-ña* 'bubbling'. Some of the expressive Tzotzil words which now have the *r*, which was first introduced through loanwords from Spanish, are native words which formerly had only *l*, for example, *ner-if* 'cross-eyed', where Colonial Tzotzil had only *nel-if* (compare *nel-* 'crooked, twisted, slanted'). The

word **kelem* 'strong young man, male' has split into two in modern Tzotzil: *kerem* 'boy (affective)' and *kelem* 'rooster' – Colonial Tzotzil had only *kelem* 'boy, bachelor, servant' (Campbell 1996).

3.7.2 Elimination of sounds through language contact

Not only can foreign sounds be acquired through diffusion, but language contact can also lead to the elimination of sounds (or features of sounds). For example, Proto-Nootkan had nasals, as Nootka still does, but closely related Nitinat and Makah lost nasality – former nasals became corresponding voiced oral stops (**m > b*, **n > d*, **m' > b'*, **n' > d'*) – due to diffusion within the linguistic area. Nitinat and Makah are found in the Northwest Coast linguistic area of North America, where languages of several different families lack nasal consonants. The lack of nasals in Nitinat and Makah is due to the influence of other nasalless languages in the linguistic area (see Chapter 12). Some other examples of loss of this sort due to language contact are the merger of /l/ and /lʲ/ in Czech to /l/, attributed to German influence in the fashionable speech of the cities (Weinreich 1953: 25); and loss of the emphatic (pharyngealised) consonants and of vowel length in Cypriot Arabic under the influence of Cypriot Greek (Campbell 1976).

3.7.3 Retention of native sounds due to language contact

In addition to the loss of sounds, language contact can also contribute to the retention of sounds, even if that sound is lost in other areas where the language is spoken which are not in contact with languages which influence the retention. For example, /lʲ/ [spelled <ll>] persists in the Spanish of the Andes region, even though in nearly all other areas of Latin America *lʲ* has merged with *j* [spelled <y>] (mentioned above). The area where Spanish has maintained this contrast coincides closely with the region where Quechua and Aymara, languages which have /lʲ/, are also widely spoken. Thus, it is due to contact with languages which have the *lʲ* that the Spanish of this region preserves /lʲ/ in contrast with /j/, a contrast lost elsewhere in Latin American Spanish.

3.7.4 Shifts in native sounds

Another kind of change that can take place in language contact situations is the shift in native sounds to approximate more closely to phonetic traits of sounds in the neighbouring languages. For example, Finnish *ö*

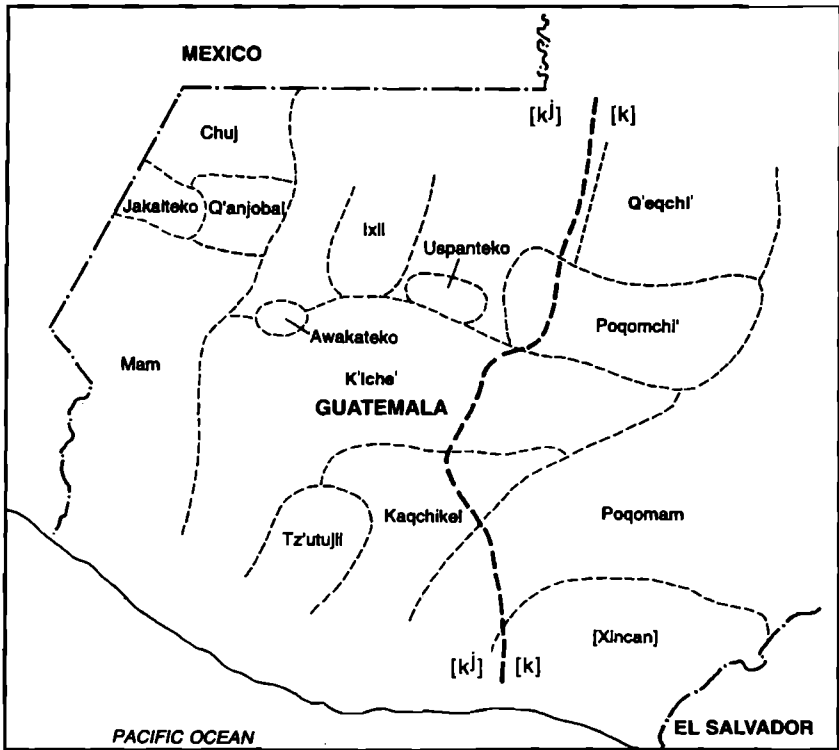
shifted to *d* under influence from Swedish, due in part to the Swedish reading model with *d* which was imposed in the Finnish schools. The Nattavaara Finnish dialect shifted native *jj* to *dʲdʲ*, medial *h* to *ʔ*, and the geminate (long) stops *pp*, *tt*, *kk* to *hp*, *ht*, *hk* respectively, under influence from Lapp. Creek (a Muskogean language of the southern USA) shifted its *ɸ* (bilabial fricative) to *f* (labiodental) under English influence (Campbell 1976).

3.7.5 Borrowed rules

Not only can foreign sounds be borrowed, but foreign phonological rules may also be borrowed. For example, borrowed stress rules are not uncommon, such as first syllable stress of many of the languages in the Baltic linguistic area (see Chapter 12), or the rule which places stress on the vowel before the last consonant ($V \rightarrow \acute{V} / _ C(V)\#$), shared by several unrelated American Indian languages of southern Mexico and Guatemala. The rule which palatalises velar stops when followed by a uvular consonant in the same root (for example, *k'aq* $\rightarrow$ *kʲ'aq* 'flea'; *ke:χ* $\rightarrow$ *kje:χ* 'deer') was borrowed from Mamean languages into the adjacent dialects of several K'ichean languages (two distinct sub-branches of the Mayan family), as shown in Map 3.1. Several Greek dialects of Asia Minor have incorporated a vowel-harmony rule under influence from Turkish. The French spoken in Quimper borrowed a rule of final consonant devoicing from Breton, spoken in that region (see Campbell 1976, 1977). Borrowed phonological rules are not uncommon.

3.7.6 Diffused sound changes

Related to borrowed phonological rules is the borrowing of sound changes from one language to another. For example, the change of *k* to *č* has diffused throughout the languages of a continuous area of the Northwest Coast of North America from Vancouver Island to the Columbia River, affecting languages of different families. A similar change of *k* to *c* (a laminal palato-alveolar affricate) before front vowels diffused through Telugu, Tamil, Malayalam and some dialects of Tulu (Dravidian languages), and Marathi (Indo-Aryan) (in several of these languages, *c* before front vowels is in complementary distribution with *ts* before back vowels). The sound change of *ts* to *s* diffused after European contact among neighbouring Q'eqchi', Poqomchi' and Poqomam (Mayan languages) (Campbell 1977).



MAP 3.1: Diffusion of palatalised velars in K'ichean languages (redrawn after Campbell 1977: Map 1)

3.7.7 Calques (loan translations, semantic loans)

In loanwords, something of both the phonetic form and meaning of the word in the donor language is transferred to the borrowing language, but it is also possible to borrow, in effect, just the meaning, and instances of this are called *calques* or *loan translations*, as illustrated by the often-repeated example of *black market*, which owes its origin in English to a loan translation of German *Schwarzmarkt*, composed of *schwarz* 'black' and *Markt* 'market'. Other examples follow.

(1) The word for 'railway' ('railroad') is a calque based on a translation of 'iron' + 'road/way' in a number of languages: Finnish *rautatie* (*rauta* 'iron' + *tie* 'road'); French *chemin de fer* (literally 'road of iron'); German *Eisenbahn* (*Eisen* 'iron' + *Bahn* 'path, road'); Spanish *ferrocarril* (*ferro-* 'iron' in compound words + *carril* 'lane, way'); and Swedish *järnväg* (*järn* 'iron' + *väg* 'road').

(2) English has a number of early calques based on loan translations from Latin, for example: *almighty* < Old English *ælmih̄tig*, based on Latin *omnipotens* (*omni*- 'all' + *potēns* 'powerful, strong'), and *gospel* < *gōdspell* (*gōd* 'good' + *spel* 'news, tidings'), based on Latin *evangelium* which is from Greek *eu-aggelion* 'good-news/message' (<gg> is the normal transliteration of Greek [ŋg]).

(3) A number of languages have calques based on English *skyscraper*, as for example: German *Wolkenkratzer* (*Wolken* 'clouds' + *kratzer* 'scratcher, scraper'); French *gratte-ciel* (*gratte* 'grate, scrape' + *ciel* 'sky'); and Spanish *rascacielos* (*rasca* 'scratch, scrape' + *cielos* 'skies, heavens').

(4) Some Spanish examples include: (1) varieties of American Spanish have *manzana de Adán* 'Adam's apple', a loan translation from the English name (compare Peninsular Spanish *nuez* (*de la garganta*), literally 'nut (of the throat)'). (2) Spanish *plata* 'silver' comes from Latin *platta* 'flat' and is thought to have acquired its sense of 'silver' through loan translation from Arabic *luḡayn* or *waraqā*, both of which mean both 'thin plate' and 'silver'. (3) More modern loan translations in Spanish from English include *cadena* 'chain' and now also 'chain of stores', *estrella* 'star' and now also 'movie star', *canal* 'canal' and now also 'channel (for television)', *guerra fría* 'cold war', *tercer mundo* 'Third World', *aire acondicionado* 'air conditioning', *desempleo* 'unemployment', *supermercado* 'supermarket'.

(5) A number of calques are shared widely among the languages of the Mesoamerican linguistic area (see Chapter 12); these translate the semantic equations illustrated in the following: 'boa' = 'deer-snake', 'door' = 'mouth of house', 'egg' = 'bird-stone', 'knee' = 'leg-head', 'lime' = 'stone(-ash)', 'wrist' = 'hand-neck' (Campbell, Kaufman and Smith-Stark 1986).

3.7.8 Emphatic foreignisation

Sometimes, speakers go out of their way to make borrowed forms sound even more foreign by substituting sounds which seem to them more foreign than the sounds which the word in the donor language actually has. These examples of further 'foreignisation' are usually found in loans involving slang or high registers; it is somewhat akin to hypercorrection (see Chapter 4). The phenomenon is illustrated in examples such as the frequent news media pronunciations of *Azerbaijan* and *Beijing* with the somewhat more foreign-sounding ʒ, [azerbai'ʒan] and [bei'ʒiŋ], rather than the less exotic but more traditional pronunciation with ʃ, [bei'ʃiŋ] and [azer'baiʃan] (with penultimate stress in the latter). The

English borrowing from French *coup de grace* (literally, 'blow/hit of grace') is more often rendered without the final *s*, as /ku de gra/, than as /ku de gras/, where many English speakers expect French words spelled with *s* to lack *s* in the pronunciation and have extended this to eliminate also the /s/ of *grace*, though in French the *s* of *grace* is pronounced, [gRas]. In borrowings in Finnish slang, sounds which match native Finnish sounds are often replaced with less native-sounding segments; for example, in *bonja-ta* 'to understand', from Russian *ponjat'*, and in *bunga-ta* 'to pay for, to come up with the money for', from Swedish *punga*, the *p* – a sound which native Finnish has – was further 'foreignised' by the substitution of more foreign-sounding *b*, a sound not found in native Finnish words. (Compare Hock and Joseph 1996: 261, 271.)

3.8 Cultural Inferences

It is not difficult to see how loanwords can have an important historical impact on a culture – just consider what the evening news in English might be like without *money* and *dollars*, or *sex*, or *religion*, *politicians* and *crime*. These words are all loans:

(1) *money*: borrowed in Middle English times from French (see Old French *moneie*; compare Modern French *monnaie* 'money, coin'), ultimately from Latin *monēta*, from the name of *Juno monēta* 'Juno the admonisher' in whose temple in Rome money was coined (ultimately *admonish* and *money* are related, both involving borrowed forms which hark back to Latin *monēre* 'to admonish') (Anttila 1989: 137).

(2) *dollar*: borrowed into English in the sixteenth century from Low German and Dutch *daler*, ultimately from High German *thaler*, in its full form *Joachimsthaler*, a place in Bohemia, literally 'of Joachim's valley', from where the German *thaler*, a large silver coin of the 1600s, came, from a silver mine opened there in 1516.

(3) *sex*: first attested in English in 1382, ultimately from Latin *sexus* 'either of the two divisions of organic beings distinguished as male and female respectively', derived from the verb *secāre* 'to cut, divide'. (English *sect*, *section*, *dissect* and *insect* are borrowings based on the same Latin root.)

(4) *religion*: borrowed from French *religion*, first attested in English in 1200 (ultimately from Latin *religiōn-em*, of contested etymology, said to be from either *relegere* 'to read over again' or *religāre* 'to bind, religate', reflecting the state of life bound by monastic vows).

(5) *politician*: borrowed from French *politicien*, first attested in

English in 1588, 'a political person, chiefly in the sinister sense, a shrewd schemer, a crafty plotter or intriguer'.

(6) *crime*: borrowed from French *crime*, first attested in English in 1382; ultimately from Latin *crīmen* 'judgement, accusation, offence'.

A simple example which illustrates the sort of cultural information that can be derived from loanwords comes from the 'Western American' or 'cowboy' vocabulary in English, a large portion of which is borrowed from Spanish: *adobe* 'sun-dried bricks, a structure made of adobe bricks' < *adobe*; *arroyo* 'a water-carved gully in a dry region' < *arroyo* 'brook, small stream'; *bronco* < *bronco* 'rough, rude'; *buckaroo* < *vaquero* 'cowhand'; *burro* < *burro* 'burro', 'donkey'; *calaboose* 'jail, prison' < *calabozo* 'prison cell, dungeon'; *canyon* < *cañón* 'ravine, gorge, canyon'; *cayuse* 'an Indian pony' < *caballo(s)* 'horse(s)' (perhaps first borrowed from Spanish into Chinook Jargon and from there into English); *chaps* [ʃæps] < *chaparreras* 'open leather garment worn by riders over their trousers to protect them'; *cinch* 'saddle-girth' < *cincha* 'belt, sash, cinch'; *corral* < *corral*; *coyote* < Spanish *coyote* (ultimately from Nahuatl *koyōtl* 'coyote'); *desperado* 'a man ready for deeds of lawlessness or violence' < Older Spanish *desperado* 'without hope, desperate' (compare Modern Spanish *desesperado* 'without hope'); *lariat* < Spanish *la reata* 'the rope, lasso'; *lasso* < *lazo* 'knot, bow, lasso'; *mesa* 'flat-topped hill with steep sides' < *mesa* 'table', 'plateau'; *mustang* < *mestenco* 'lacking an owner'; *palomino* 'horse with pale cream-coloured or golden coat and cream-coloured to white mane and tail' < *palomino* 'dove-like', see Mexican Spanish *palomo* 'pale cream-coloured horse'; *pinto* 'a paint (horse), a mottled horse' < *pinto* 'painted, mottled'; *ranch* < *rancho* 'hut or house in the country', *rancher* < *ranchero* 'farmer, rancher'; *rodeo* < *rodeo* 'a round-up' (from *rodear* 'to go round'); *stampede* < Mexican Spanish *estampida* 'crash, uproar'; *vigilante* < *vigilante* '(one who is) vigilant' (from *vigilar* 'to watch, keep an eye on'). Given the large number of loanwords in this semantic domain, we infer that culture and economy of the American West were highly influenced by contact with Spanish speakers there.

More extensive examples of this sort are found in Chapter 15, which deals with the information that loanwords can provide for the interpretation of prehistory.

3.9 Exercises

Exercise 3.1

Find ten examples of loanwords (not already mentioned in this chapter) into any language you like, including English. You can consult

Borrowing

dictionaries which give historical sources of lexical items or books on the history of particular languages, if you wish. Try to identify the form and meaning of the word in the donor language.

Exercise 3.2 Twentieth-century loans into English

In the history of English, relatively few words were borrowed during the twentieth century when seen in comparison with the large number of loans from earlier times. Still, many did come into the language; here are a few of them. Look up twenty of these (or more if you like) either in a good dictionary of English which indicates the sources from which words come or in a dictionary of the language from which they were borrowed. Try to determine the original meaning and form in the borrowing language and note any changes (in meaning or form) that the word has undergone as it was borrowed into English. The original meanings of many of these may surprise you.

Afrikaans:	apartheid
Chinese:	chow mein, kung fu
Czech:	robot
French:	avant-garde, boutique, camouflage, chassis, cinema, discotheque, fuselage, garage, limousine, sabotage
German:	angst, blitz, ersatz, flak, Nazi, snorkel, strafe, wienerschnitzel
Hawai'ian:	aloha, lei, ukulele
Hebrew:	kibbutz
Italian:	fascism, partisan, pasta, pizza
Japanese:	bonsai, kamikaze, karaoke, karate, origami
Russian:	bolshevik, cosmonaut, glasnost, intelligentsia, perestroika, sputnik
Spanish:	aficionado, macho, marijuana, paella, tango
Swedish	(or Scandinavian generally): moped, ombudsman, slalom, smorgasbord
Yiddish:	schmaltz, schlock, klutz

Exercise 3.3 Māori and English loanwords

(1) Based on the criteria for establishing loanwords and the direction of borrowing, determine from the following lists of words which are borrowed into Māori from English and which are borrowed into English from Māori. Note that Māori has the following inventory of sounds: /p, t, k, ϕ , h, r, m, n, ŋ, r, i, e, a, o, u/. In the traditional orthography, / ϕ / is spelled *wh*; /ŋ/ is spelled *ng*. Also, native Māori words permit no

consonant clusters, rather only syllables of the shape CV (a single consonant followed by a single vowel). (2) Can you say anything about the pronunciation of the variety of English from which Māori took its English loans? (3) What can you say about the social or cultural nature of the contact between speakers of Māori and English? Can you identify semantic domains (areas of meaning) most susceptible to borrowing in either of the languages? (4) How were words from one language modified to fit the structure of the other?

hāhi	church
haina	China; sign
haka	haka, Māori dance
haki	flag (< Union <i>Jack</i>)
hāma	hammer
hānara	sandal
hāngi	hangi, oven (hole in the ground with wrapped food placed on heated stones in the pit with fire)
hānihi	harness
hāpa	harp
hāte	shirt
hēmana	chairman
hereni	shilling
heti	shed
hipi	sheep
hiraka	silk
hiriwa	silver
hoeha	saucer
hohipere	hospital
hopa	job
hōro	hall
hū	shoe
hui	meeting for discussion
huka	sugar
hūka	hook
hupa	soup
hūri	jury
iāri	yard
ihipa	Egypt
ingarangi	England
ingarihi	English
inihi	inch
iota	yacht

Borrowing

iwi	iwi, Māori tribe
kāka	cork
kānara	colonel
kapa	copper, penny
kāpara	corporal
kāpata	cupboard
kara	collar
karache	grass; glassware, tumbler; class
karāhi	glass
karahipi	scholarship
karaka	clock; clerk
karauna	crown
kāreti	college; carrot; carriage
kāta	cart
kātaroera	castor oil
kātipa	constable
kaumātua	kaumatua, Māori elder
kauri	kauri tree
kāwana	governor
kea	kea (mountain parrot)
kihi	kiss
kirihimete	Christmas
kiwi	kiwi bird
kōmihana	commission
kōti	court (of law); goat
kuihipere	gooseberry
kūmara	kumara, sweet potato
kura	school
māhi	mast
mana	mana, influence, prestige
māori	Māori, native people (in Māori <i>māori</i> means 'clear, ordinary, native New Zealander')
marae	marae, enclosed meeting area
marahihi	molasses
moa	moa (very large extinct flightless bird)
mokopuna	mokopuna, grandchild
motokā	car, automobile (< motor car)
nēhi	nurse
ngaio	ngaio, coastal shrub
ōkiha	ox
ōriwa	olive

Historical Linguistics: An Introduction

otimira	oatmeal
pā	pa, stockaded village
pahi	bus
paihikara	bicycle
paitini	poison
pāka	box
pākehā	pakeha, European, non-Māori
pāmu	farm
pāoka	fork
parakuihi	breakfast
parama	plumber
pāua	paua, abalone shell
pāuna	pound
perakēhi	pillowcase
pereti	plate
pī	bee
pirihi	priest
pirihimana	police(man)
piriniha	prince
piriti	bridge
pōkiha	fox
pōro	ball
pukapuka	book
pūkeko	pukeko, swamp hen
pune	spoon
purū	blue
pūru	bull
rare	lolly, sweets
rata	doctor
reme	lamb
rērewē	railroad, railway
rēwera	devil
rīhi	dish; lease
rimu	rimu, red pine
rōre	lord (title)
rori	road
takahē	takahe, bird species (<i>Notoris mantelli</i>)
tana	ton
tangi	tangi, Māori mourning or lamentation (associated with funerals)
tāone	town

Borrowing

taonga	taonga, heritage, Māori treasure, possessions
tāra	dollar
taraiki	strike
tauwi	tauwi, non-Māori
tēpu	table
tiā	jar
tiaka	jug
tiamana	chairman; German
tiāti	judge
tīhi	cheese
tōtara	totara (tree species, <i>Podocarpus totara</i>)
tui	tui, parson bird
waka	waka, canoe
wātene	warden
weka	weka, woodhen
wētā	weta, large insect species (<i>Hemideina megacephala</i>)
whakapapa	whakapapa, genealogy
whānau	whanau, extended family (community of close fellows)
whatura	vulture
whira	violin, fiddle
whīra	field
whurū	'flu'
whurutu	fruit
whutupaoro	football (rugby)
wihara	whistle
wīra	wheel
wōro	wall
wuruhi	wolf

Exercise 3.4 Spanish loanwords

The following is a list of borrowings in Spanish from different languages. What historical and cultural inferences might you suggest about the nature of the contact between speakers of Spanish and each of these other languages based on these? Concentrate on the Germanic and Arabic contacts. Which of the non-Germanic words do you think were further borrowed later from Spanish to English (or from Spanish to French and then on to English)?

Basque: *boina* 'beret (cap)', *cachorro* 'cub, pup', *chaparro* 'short, chubby, squatty, a scrub', *izquierdo* 'left', *pizarra* 'slate, blackboard', *urraca* 'magpie', *zurdo* 'left-handed'.

Celtic loans, already in Latin (from Gaul), inherited in Spanish: *abedul* 'birch tree', *bragas* 'breeches, trousers', *camisa* 'shirt', *carro* 'cart', *cerveza* 'beer'.

Germanic (Swabians in Galicia; Vandals, Alans; Franks – Visigoths entered Spain in AD 412). Loans: *eslabón* 'link', *ganar* 'to gain, win, earn', *ganso* 'goose'; *bandera* 'flag', *botín* 'booty', *dardo* 'dart', *espíar* 'to spy', *espuela* 'spur', *guardar* 'guard', *guerra* 'war', *guía* 'guide', *hacha* 'axe', *robar* 'to rob', *yelmo* 'helmet'; *arpa* 'harp', *banco* 'bench', *barón* 'baron', *blanco* 'white', *brasa* 'live coal', *estaca* 'stake', *falda* 'skirt', *gris* 'grey', *guante* 'glove', *rico* 'rich', *ropa* 'clothing', *sopa* 'soup', *tacaño* 'stingy', *toalla* 'towel'; *norte* 'north', *sur* 'south', *este* 'east', *oeste* 'west'; personal names: *Anfonso*, *Elvira*, *Federico*, *Fernando*, *Francisco*, *Gonzalo*, *Matilde*, *Ricardo*, *Rodrigo*; and so on.

Arabic (Moors landed in Spain in AD 711; by 718 they had spread over most of the Peninsula, where they remained until the recapture of Granada in 1492). Loans: *Guad-* 'river' (in place names, for example, *Guadalajara* 'river of stones', *Guadarrama* 'river of sand'); *alcázar* 'castle' (corruption of Latin *castrum* with Arabic article *al-*), *alférez* 'ensign', *alcalde* 'mayor', *atalaya* 'watchtower', *aldea* 'village', *almacén* 'storehouse', *barrio* 'district of city', *adobe* (sun-dried brick), *albañil* 'mason', *alcoba* 'bedroom' (alcove), *alfarero* 'potter', *bazar* 'bazaar', *alfiler* 'pin', *alfombra* 'rug', *almohada* 'pillow', *ataúd* 'coffin', *aceite* 'oil', *aceituna* 'olive', *albaricoque* 'apricot', *alcachofa* 'artichoke', *alfalfa* 'alfalfa', *algodón* 'cotton', *arroz* 'rice', *azúcar* 'sugar', *limón* 'lemon', *naranja* 'orange', *jazmín* 'jasmine', *alcohol* 'alcohol', *cero* 'zero', *cifra* 'cipher', *cenit* 'zenith', *albóndiga* 'meat ball', *azul* 'blue', *matar* 'to kill' (Arabic *mat* 'dead, checkmate'), *mono* 'monkey', *ojalá* 'if Allah will (oh I wish)', *res* 'cattle'.

Arawak-Taino: *canoa* 'canoe', *iguana* 'iguana', *nigua* 'nit', *maíz* 'maize, corn', *ají* 'chili pepper', *yuca* 'sweet manioc', *tuna* 'fruit of prickly pear cactus', *barbacoa* 'barbecue', *batata* 'sweet potato', *enagua* 'petticoat, skirt, native skirt', *huracán* 'hurricane', *sabana* 'savanna', *macana* 'club', *cacique* 'chief'; *bejuco* 'vine', *maní* 'peanut'.

Carib: *canibal* 'cannibal', *manatí* 'manatee (sea cow)', *loro* 'parrot', *colibrí* 'hummingbird', *caimán* 'cayman, alligator species', *caribe* 'Carib', 'Caribbean'.

Nahuatl: *hule* 'rubber', *tiza* 'chalk', *petaca* 'covered hamper, trunk, suitcase', *coyote* 'coyote', *ocelote* 'ocelot', *sinsonte* 'mocking bird', *guajolote* 'turkey', *chocolate* 'chocolate', *cacao* 'cacao, cocoa', *chicle* 'gum, chicle', *tomate* 'tomato', *aguacate* 'avocado', *cacahuete* 'peanut', *tamal* 'támale', *jícara* 'gourd cup, small gourd bowl', *metate* 'quern,

grinding-stone', *mecate* 'string, twine', *pulque* 'pulque (drink from century plant juice)', *achiote* 'bixa (food dye)', *camote* 'sweet potato', *ayote* 'pumpkin', *chayote* 'chayote (a vegetable)', *elote* 'ear of corn', *nopal* 'prickly pear cactus', *guacamole* 'guacamole', *cuate* 'buddy, twin', *caite* 'sandal'.

Quechua: *pampa* 'pampa', *papa* 'potato', *coca* 'coca', *quino* 'quinine', *mate* 'mate (a strong tea)', *guano* 'guano (bird fertiliser)', *llama* 'llama', *vicuña* 'vicuña' (llama species), *alpaca* 'alpaca' (llama species), *cóndor* 'condor', *inca* 'Inca', *gaucho* 'gaucho' (cowboy/horseman).

Tupi-Guarani: *jaguar* 'jaguar', *piraña* 'piranha' (violent fish), *tapioca* 'tapioca', *ananás* 'pineapple'.

English: *bistec* 'beefsteak', *ron* 'rum', *hysqui/whisky* 'whisky', *orange crush* 'Orange Crush (a soft drink)', *sandwich/sanduche/sanguich* 'sandwich', *panqueque* 'pancake', *lonche* 'lunch', *boicot/boicotear* 'boycott', *clip* 'paperclip', *piqueteo* 'picketing' / *piquetear* 'to picket', *yate* 'yacht', *parquear* 'to park', *parqueo* 'parking place', *bumper/bómpier* 'car bumper', *jet* 'jet', *stop* 'stop', *jeep* 'jeep'; *clóset* 'water closet, toilet', *plywood/plaiwud* 'plywood', *álbum* 'album', *bar* 'bar', *film(e)/filmar* 'film'/'to film', *show* 'show', *ticket/tiquete* 'ticket', *sex appeal/sexapil* 'sex appeal', *stress/estrés* 'stress', *spray/espréi* 'spray', *chequear/checar* 'to check'.

(For some of these and for further examples, see Campbell 1997a; Corominas 1974; Lapesa 1981; Resnik 1981; Spaulding 1965.)

Exercise 3.5 Hispanisms in Mayan languages

The following is a list of some of the 'hispanisms' (loanwords from Spanish) found in some of the Mayan languages (of Mexico and Guatemala). The Spanish forms are presented both in current pronunciation and in that of the sixteenth century. Based on these, what evidence can you derive from these loans in the Mayan languages relevant to changes which have taken place in Spanish since these forms were borrowed? By way of illustration, consider the following example involving Sayula Popoluca (a Mixe-Zoquean language):

Spanish *caja* 'box' (modern [kaxa], colonial [kafa]: Sayula Popoluca *kafa* 'coffin' ('box for the dead')).

From this, you would tentatively conclude that Spanish has undergone the change of *f* > *x* after this word was borrowed. Of course, it is necessary to keep in mind that the borrowing language will make substitutions, replacing the Spanish sounds with the closest phonetic counterpart available in the recipient language, so that not all differences in the

borrowing language will be due to changes which Spanish has subsequently undergone; to determine this, it will be necessary to compare the sixteenth-century and the modern Spanish forms. In regard to this particular example, it is interesting that Sayula Popoluca later borrowed the Spanish word for 'box' again, after the change, as *kaha* 'cardboard box' (note that Sayula Popoluca has no [x], so that [h] is the language's closest approximation to Modern Spanish [x]).

Note the following phonetic symbols found in these examples:

- [ɬ] dental (fronted) *s*
- [ʃ] apical alveolar *s*
- [ʂ] laminal retroflex *f*

Focus on /lʲ/ and /j/:

1. *llave* 'key' (modern [jaβe], colonial [lʲaβe, lʲave]): Akateko *laweh*, Q'anjobal *lawe*, K'iche' *lawe*.
2. *cebolla* 'onion' (modern [seβoja], colonial [ʃeβolʲa]): Akateko *sewolya*, Q'anjobal *sewolia*, Tzeltal *sebolia* (none of the Mayan languages has /lʲ/, but they do have /l/ and /j/).
3. *cuchillo* 'knife' (modern [kučijo], colonial [kučilʲo]): Chol *kučilu*, Huastec *kuči:l*, Q'anjobal *kučiilu* 'knife, razor', K'iche' *kuči?l*.
4. *silla* 'chair' (modern [sija], colonial [silʲa]): Akateko *šilah*, Huastec *ši:la?* 'saddle, chair', Q'anjobal *šila*, K'iche' *šila*, Tzotzil *šila*.
5. *castellano* 'Castilian, Spanish' (modern [kastejano], colonial [kaʃtelʲano]): Cholt' *kaʃtilan čaβ* 'sugar' (literally 'Castilian honey'), *kaʃtilan wa* 'bread' (literally 'Castilian tortilla'); K'iche' *kaʃtilan*, *kaʃlan* 'Castilian, Spanish, pure, correct'.

Focus on /ʃ/, /s/, and /ʂ/:

6. *sartén* 'frying pan' (modern [sartén], colonial [ʃartén]): Q'anjobal *šalten*, *šaltin*, Motocintlec *šalten*, Tzotzil *šalten*.
7. *sebo* 'tallow, fat' (modern [seβo], colonial [ʃeβo]): Q'anjobal *šepu?*, K'iche' *šepu*, *šepo*, Tzotzil *šepu*.
8. *seda* 'silk' (modern [seða], colonial [ʃeða]): Chol *šelah* 'ribbon', Tzotzil *šela* 'silk, ribbon'. (Mayan languages have no [ð].)
9. *semana* 'week' (modern [semana], colonial [ʃemana]): Q'eqchi' *šama:n*, *fema:n*, K'iche' *šemano*, Tzotzil *šemana*.
10. *señora* 'lady, madam, Mrs' (modern [senʲora], colonial [ʃenʲora]): Chol *šinolah* 'non-Indian woman', Mam *šnu:l* 'non-Indian woman', Motocintlec *šnu:la:n* 'non-Indian woman', Tzeltal *šinola* 'non-Indian woman'.
11. *mesa* 'table' (modern [mesa], colonial [meʃa]): Akateko *meʃah*, Huastec *me:ʃa*, Q'eqchi' *me:ʃa*, Motocintlec *me:ʃah*, K'iche' *meʃa*.

Borrowing

12. *patos* 'ducks' (modern [patos], colonial [patos]): Huastec *pa:tuʃ*, Q'eqchi' *patuʃ*, K'iche' *pataʃ*, Tzotzil *patof*, all 'duck'. (Note that several plant and animal terms, though singular, were borrowed from the Spanish plural form, as in this example and the next.)
13. *vacas* 'cows' (modern [bakas], colonial [βakas, vakaʃ]): Akateko *wakaʃ* 'cattle', Chol *wakaʃ* 'bull, cow', Itzá *wakaʃ* 'cattle', Q'anjobal *wakaʃ* 'cow, cattle', Q'eqchi' *kwakaʃ* 'cow, cattle', Mopan *wakaʃ* 'cow, bull, cattle', Tzeltal *wakaʃ* 'beef'. (See also 4 and 5 above.)
14. *cidra* 'a grapefruit-like fruit' (modern [siðra], colonial [ʃiðra]): Chol *silah*, Tzotzil *sila*. (Note that these languages have no *d*, *ð* or *r*).
15. *cocina* 'kitchen' (modern [kosina], colonial [koʃina]): Motocintlec *kusi:nah*, Tzotzil *kusina*.
16. *cruz* 'cross' (modern [krus], colonial [kruʃ]): Chol *rus*, Q'anjobal *kurus*, Q'eqchi' *kurus*, Mam *lu:s*, Motocintlec *kuru:s*, Tzotzil *kurus*.
17. *lazo* 'lasso, rope' (modern [laso], colonial [laʒo]): Akateko *lasuh*, Chol *lasoh*, Tzeltal *laso*, Tzotzil *lasu*.
18. *taza* 'cup' (modern [tasa], colonial [taʒa]): Chol *tasa* 'piece of glass', Huastec *ta:sa*, Q'eqchi' *ta:s*.
19. *jabón* 'soap' (modern [xaβón], colonial [ʃabón]): Chol *ʃapum*, *ʃapom*, Huastec *fabu:n*, Jakalteko *ʃapun*, Q'anjobal *ʃapun*, Motocintlec *ʃa:puh*, K'iche' *ʃbon*, Tzeltal *ʃapon*.
20. *jarro* 'jug, jar' (modern [xaro], colonial [ʃaro]): Jakalteko *ʃalu*, Q'anjobal *ʃalu*, Mam *ʃar*, Motocintlec *ʃa:ruh*, K'iche' *ʃaru?*, Tzeltal *ʃalu*, Tzotzil *ʃalu*.
21. *aguja* 'needle' (modern [aguxa], colonial [agufa]): Akateko *akufah*, Chol *akufan*, Q'anjobal *akufa*, Q'eqchi' *aku:f*, *ku:f*, Motocintlec *aku:fah*, Tzeltal *akufa*, Tzotzil *akufa*.
22. *caja* 'box' (modern [kaxa], colonial [kafa]): Chol *kafa-te?* 'chest' (*te?* = 'wood'), Q'anjobal *kafa* 'box, chest', Q'eqchi' *ka:f* 'chest', Mam *ka:ʃ* 'box', Motocintlec *ka:fah* 'box, chest', K'iche' *kafa* 'box, chest, trunk', Tzeltal *kafa*.

Focus on /v/ and /b/:

23. *ventana* 'window' (modern [bentana], colonial [βentana, ventana]): Chol *wentana*, Q'anjobal *wentena*, Motocintlec *wanta:nah*.
24. (= 13 above) *vacas* 'cows' (modern [bakas], colonial [βakas, vakaʃ]): Akateko *wakaʃ* 'cattle', Chol *wakaʃ* 'bull, cow', Itzá *wakaʃ* 'cattle', Q'anjobal *wakaʃ* 'cow, cattle', Q'eqchi' *kwakaʃ* 'cow, cattle', Mopan *wakaʃ* 'cow, bull, cattle', Tzeltal *wakaʃ* 'beef'.

25. *calvario* 'Calvary' (modern [kalβario], colonial [kalβario, kal-vario]): Q'anjobal *karwal* 'cemetery, graveyard', K'iche' *kalwar*.
26. *clavos* 'nails' (modern [klaβos], colonial [klaβos, klavos]): Akateko *lawuf*, Chol *lawuf*, Tzeltal *lawuf*, Tojolabal *lawuf*. (Note that these forms mean 'nail', but are borrowed from the Spanish plural form.)
27. *rábanos* 'radishes' (modern [ráβanos], colonial [ráβanos, rávanoš]): Tojolabal *lawunif*, Motocintlec *luwaʔnfa* 'rábano', Tzotzil *alavanuf*. (Note that these all mean 'radish', though borrowed from the Spanish plural form. Tzotzil has a phonemic contrast between /v/ and /b/, but has no /w/; the other languages have no /v/, but do have /w/.) (See also 1 above.)
28. *botón(es)* 'button(s)' (modern [botón], colonial [botón]): Q'eqchi' *hoto:nf*, K'iche' *botona*, *botonif*, Tojolabal *boton* 'button, knot in wood', Tzotzil *boton*.
29. *bolsa* 'bag, pocket' (modern [bolsa], colonial [bolša, borša]): Chol *borfa*, Q'eqchi' *bo:f* 'pocket', K'iche' *borfa*, Tzeltal *bolsa*.
30. *nabos* 'turnips' (modern [naβos], colonial [naboš]): K'iche' *napuf*, Tzotzil *napuf*, Motocintlec *kolinaʔwa*. (See also 2 and 7 above.)

Analogical Change

They have been at a great feast of languages, and stolen the scraps.

(William Shakespeare [1564–1616],

Love's Labour's Lost, V, 1, 39)

4.1 Introduction

Sound change, borrowing and analogy have traditionally been considered the three most important (most basic) types of linguistic change. In spite of the importance of analogy, linguistics textbooks seem to struggle when it comes to offering a definition. Many do not even bother, but just begin straight away by presenting examples of analogical change. Some of the definitions of analogy that have been offered run along the following lines: analogy is a linguistic process involving generalisation of a relationship from one set of conditions to another set of conditions; analogy is change modelled on the example of other words or forms; and analogy is a historical process which projects a generalisation from one set of expressions to another. Arlotto (1972: 130), recognising the problem of offering an adequate definition, gives what he calls 'a purposely vague and general definition': '[analogy] is a process whereby one form of a language becomes more like another with which it has somehow associated'. The essential element in all these definitions, vague and inadequate though this may sound, is that *analogical change involves a relation of similarity* (compare Anttila 1989: 88).

For the Neogrammarians, sound change was considered regular, borrowings needed to be identified, and analogy was, in effect, everything else that was left over. That is, almost everything that was not sound change or borrowing was analogy. Analogy became the default (or

wastebasket) category of changes. In analogical change, one piece of the language changes to become more like another pattern in the language where speakers perceive the changing part as similar to the pattern that it changes to be more like. Analogy is sometimes described as 'internal borrowing', the idea being that in analogical change a language may 'borrow' from some of its own patterns to change other patterns. Analogy is usually not conditioned by regular phonological factors, but rather depends on aspects of the grammar, especially morphology.

By way of getting started, let us consider some examples of analogy. Originally, *sorry* and *sorrow* were quite distinct, but in its history *sorry* has changed under influence from *sorrow* to become more similar to *sorrow*. *Sorry* is from the adjective form of 'sore', Old English *sārig* 'sore, pained, sensitive' (derived from the Old English noun *sār* 'sore'), which has cognates in other Germanic languages. The original *ā* of *sārig* changed to *ō* and then was shortened to *o* under influence from *sorrow* (Old English *sorh* 'grief, deep sadness or regret'), which had no historical connection to *sorry*. This is an analogical change, where the form of *sorry* changed on analogy with that of *sorrow*.

There are many kinds of analogical change. In this chapter, we explore the different types of analogy and the role of analogy in traditional treatments of linguistic change, and we see how it interacts with sound change (and to a more limited extent with grammatical change, looking forward to Chapter 9 on syntactic change).

Some equate analogical change with morphological change, though this can be misleading. While it is true that many analogical changes involve changes in morphology, not all do, and many changes in morphology are not analogical. In this book, aspects of morphological change are treated not only in this chapter, but also in Chapters 2, 3, 9 and 12.

4.2 Proportional Analogy

Traditionally, two major kinds of analogical changes have been distinguished, *proportional* and *non-proportional*, although the distinction is not always clear or relevant. Proportional analogical changes are those which can be represented in an equation of the form, $a : b = c : x$, where one solves for 'x' – *a* is to *b* as *c* is to what? (x = 'what?'). For example: *ride* : *rode* = *dive* : x , where in this instance x is solved with *dove*. In this analogical change, the original past tense of *dive* was *dived*, but it changed to *dove* under analogy with the class of verbs which behave like *drive* : *drove*, *ride* : *rode*, *write* : *wrote*, *strive* : *strove*, and so on.

(Today, both *dived* and *dove* are considered acceptable in Standard English, though the use of these forms does vary regionally.) The four-term analogy of the form $a : b = c : x$ is also sometimes presented in other forms, for example as: $a : b :: c : x$; or as:

$$\frac{a}{c} = \frac{b}{x}$$

Not all cases considered proportional analogy can be represented easily in this proportional formula, and some cases not normally thought to be proportional analogical changes can be fitted into such a formula. In the end, the distinction may not be especially important, so long as you understand the general notion of analogy. Let us turn to examples of four-part proportional analogy, which will make the concept clearer.

(1) A famous example comes from Otto Jespersen's observation of a Danish child 'who was corrected for saying *nak* instead of *nikkede* ('nodded'), [and] immediately retorted "stikker, stak, nikker, nak," thus showing on what analogy he had formed the new preterit' (Jespersen 1964: 131). That is, the child produced the proportional formula: *stikker* 'sticks' : *stak* 'stuck' = *nikker* 'nods' : *nak* 'nodded'.

(2) In English, the pattern of the verb *speak/spoke/spoken* ('present tense'/'past tense'/'past participle') developed through remodelling on analogy with verbs of the pattern *break/broke/broken*. In Old English, it was *sprec/spræc/gesprecen* (compare the *spake* 'past tense' of Early Modern English with present-day *spoke*).

(3) Finnish formerly had *laksi* 'bay (nominative singular)'; its possessive form ('genitive singular') was *lahde-n*, just as words such as *kaksi* (nominative singular) : *kahde-n* (genitive singular) 'two'. However, under the weight of Finnish words with the different nominative-genitive pattern as in *lehti* : *lehde-n* 'leaf', *tähti* : *tähde-n* 'star', the *laksi* nominative singular of 'bay' changed to *lahti*, as in the proportional formula: *lehden* : *lehti* :: *lahden* : *lahti* (< *laksi*). The past tense form of the verb 'to leave' had the same fate: originally the pattern was *lähte* 'leave' : *läksi* 'left', but this alternation was shifted by the same analogical pattern to give *lähti* 'left' (past tense) in Standard Finnish.

(4) A more grammatical example of proportional analogical change is found in some Spanish dialects in the non-standard pronoun pattern called *laísmo*. Standard Spanish has distinct masculine and feminine third person pronominal direct object forms, but the indirect object pronominal forms do not distinguish gender, as in:

lo ví 'I saw him' [him I.saw], *la ví* 'I saw her' [her I.saw]
le di 'I gave him/her (something)' [him/her I.gave].

In the dialects with *laísmo*, the change created a gender distinction also in the indirect object pronoun forms:

le di 'I gave him (something)', *la di* 'I gave her (something)'.

The proportional analogy in the formula would be:

lo ví 'I saw him' : *la ví* 'I saw her' :: *le di* 'I gave him (something)' : *x*
where *x* is solved for *la di* 'I gave her (something)'.

(5) Proto-Nahua had a single verbal prefix to signal reflexives, **mo-*, still the basic pattern in a majority of the modern varieties of Nahua, as in Pipil *ni-mu-miktia* 'I kill myself', *ti-mu-miktia* 'we kill ourselves', and *mu-miktia* 'he/she kills himself/herself'. However, on analogy with the subject pronominal verbal prefixes, Classical Nahuatl has created distinct reflexive pronouns, *-no-* 'myself', *-to-* 'ourselves' and *(-)-mo-* 'yourself/himself/herself', as in: *ni-no-miktia* 'I kill myself', *ti-to-miktia* 'we kill ourselves' and *mo-miktia* 'he/she kills himself/herself'.

4.3 Analogical Levelling

Many of the proportional analogical changes are instances of analogical levelling. (Others are extensions; see below.) Analogical levelling reduces the number of allomorphs a form has; it makes paradigms more uniform. In analogical levelling, forms which formerly underwent alternations no longer do so after the change.

(1) For example, some English 'strong' verbs have been levelled to the 'weak' verb pattern, as for instance in dialects where *throw/threw/thrown* has become *throw/throwed/throwed*. There are numerous cases throughout the history of English in which strong verbs (with stem alternations, as in *sing/sang/sung* or *write/wrote/written*) have been levelled to weak verbs (with a single stem form and *-ed* or its equivalent for 'past' and 'past participle', as in *bake/baked/baked* or *live/lived/lived*). Thus *cleave/clove/cloven* (or *cleft*) 'to part, divide, split' has become *cleave/cleaved/cleaved* for most, while *strive/strove/striven* for many speakers has changed to *strive/strived/strived*. (*Strive* is a borrowing from Old French *estriver* 'to quarrel, contend', but came to be a strong verb very early in English, now widely levelled to a weak verb pattern.)

(2) Some English strong verbs have shifted from one strong verb pattern to another, with the result of a partial levelling. For example, in earlier English the 'present'/'past'/'past participle' of the verb *to bear* was equivalent to *bear/bare/born(e)*, and *break* was *break/brake/broke(n)*.

They have shifted to the *fight/fought/fought*, *spin/spun/spun* pattern, where the root of the 'past' and 'past participle' forms is now the same (*bear/bore/born(e)*, *break/broke/broken*).

(3) In a rather large class of verbs in Standard Spanish, *o* (unstressed) alternates with *ue* (when stressed), as in *volár* 'to fly', *vuéla* 'it flies'. Many speakers of Chicano Spanish have levelled the alternation in favour of *ue* alone in these verbs: *vuelár* 'to fly', *vuéla* 'it flies'.

(4) In English, the former 'comparative' and 'superlative' forms of *old* have been levelled from the pattern *old/elder/eldest* to the non-alternating pattern *old/older/oldest*. Here, *o* had been fronted by umlaut due to the former presence of front vowels in the second syllable of *elder* and *eldest*, but the effects of umlaut were levelled out, and now the words *elder* and *eldest* remain only in restricted contexts, not as the regular 'comparative' and 'superlative' of *old*.

(5a) *Near* was originally a 'comparative' form, meaning 'nearer', but it became the basic form meaning 'near'. If the original state of affairs had persisted for the pattern 'near'/'nearer'/'nearest', we should have had *nigh/near/next*, from Old English *nēah* 'near'/'nēarra 'nearer'/'nēahsta 'nearest'. However, this pattern was levelled out; *nearer* was created in the sixteenth century, then *nearest* substituted for *next*. Both *nigh* and *next* remained in the language, but with more limited, shifted meanings.

(5b) Similarly, *far* was also comparative in origin (originally meaning 'farther'), but this became the basic form meaning 'far', which then gave rise to the new comparative *farrer*, which was replaced by *farther* under the influence of *further* 'more forward, more onward, before in position'.

(5c) The pattern *late/later/latest* is also the result of an analogical levelling without which we would have had instead the equivalent of *late/latter/last*, with the 'comparative' from Old English *lætra* and the 'superlative' from Old English *latost*. (In this case, *later* replaced *latter*, which now remains only in restricted meaning; and *last*, though still in the language, is no longer the 'superlative' of *late*.)

(6) In Greek, **k^w* became *t* before *i* and *e*, but *p* in most other environments. By regular sound change, then, the verb 'to follow' in Greek should have resulted in variant forms such as: *hépomai* 'I follow', *hétēi* 'you follow', *hétetai* 'he/she/it follows'. However, by analogy, the *p* (from original **k^w* before *o* in this case) spread throughout the paradigm, levelling all the forms of 'to follow': *hépomai* 'I follow', *hépetai* 'you follow', *hépēi* 'he/she/it follows' (Beekes 1995: 73).

(7) Many verbs which have the same form in the singular and plural in Modern German once had different vowels, which were levelled by analogy. Thus, for example, Martin Luther (1483–1546) still wrote *er*

bleyb 'he stayed'/*sie blieben* 'they stayed' and *er fand* 'he found'/*sie funden* 'they found', where Modern German has *er blieb/sie blieben* and *er fand/sie fanden* (Polenz 1977: 84).

4.4 Analogical Extension

Analogical extension (somewhat rarer than analogical levelling) extends the already existing alternation of some pattern to new forms which did not formerly undergo the alternation. An example of analogical extension is seen in the case mentioned above of *dived* being replaced by *dove* on analogy with the 'strong' verb pattern as in *drive/drove*, *ride/rode* and so on, an extension of the alternating pattern of the strong verbs. Other examples follow.

(1) Modern English *wear/wore*, which is now in the strong verb pattern, was historically a weak verb which changed by extension of the strong verb pattern, as seen in earlier English *werede* 'wore', which would have become modern *weared* if it had survived.

(2) Other examples in English include the development of the non-standard past tense forms which show extension to the strong verb pattern which creates alternations that formerly were not there, as in: *arrive/arrove* (Standard English *arrive/arrived*), and *squeeze/squoze* (Standard *squeeze/squeezed*).

(3) In some Spanish verbs, *e* (unstressed) alternates with *ie* (when in stressed positions), as in *pensár* 'to think', *piénso* 'I think'. In some rural dialects, this pattern of alternation is sometimes extended to verbs which formerly had no such alternating pairs, for example: *aprendér* 'to learn'/*apriéndó* 'I learn', where Standard Spanish has *aprender* 'to learn'/*apréndo* 'I learn'. Others include *compriendo* 'I understand' for *comprendo*, *aprieto* 'I tighten' for *apreto*; this also extends to such forms as *diferiencía* for *diferencia* 'difference'.

(4) Where Standard Spanish has no alternation in the vowels in forms such as *crea* 'he/she creates'/*crear* 'to create', many Spanish dialects undergo a change which neutralises the distinctions between *e* and *i* in unstressed syllables, resulting in alternating forms as seen in *crea* 'he/she creates'/*criár* 'to create'. This alternation has been extended in some dialects to forms which would not originally have been subject to the neutralisation. Thus, for example, on analogy with forms of the *crea/criár* type, illustrated again in *menéa* 'he/she stirs'/*meniár* 'to stir', some verbs which originally did not have the stress pattern have shifted to this pattern, as seen in dialect *cambéa* 'he/she changes'/*cambiár* 'to change', replacing Standard Spanish *cambia* 'he/she

changes'/*cambiár* 'to change'; *vacéo* 'I empty'/*vaciár* 'to empty', replacing Standard Spanish *vácio* 'I empty'/*vaciár* 'to empty'.

From the point of view of the speaker, analogical levelling and extension may not be different, since in both the speaker is making different patterns in the language more like other patterns that exist in the language.

4.5 The Relationship between Analogy and Sound Change

The relationship between sound change and analogy is captured reasonably well by the slogan (sometimes called 'Sturtevant's paradox'): *sound change is regular and causes irregularity; analogy is irregular and causes regularity* (Anttila 1989: 94). That is, a regular sound change can create alternations, or variant allomorphs. For example, umlaut was a regular sound change in which back vowels were fronted due to the presence of a front vowel in a later syllable, as in *brother* + *-en* > *brethren*; as a result of this regular sound change, the root for 'brother' came to have two variants, *brother* and *brethr-*. Earlier English had many alternations of this sort. However, an irregular analogical change later created *brothers* as the plural form, on analogy with the non-alternating singular/plural pattern in such nouns as *sister/sisters*. This analogical change is irregular in that it applied only now and then, here and there, to individual alternating forms, not across the board to all such alternations at the same time. This analogical change in the case of *brethren* in effect resulted in undoing the irregularity created by the sound change, leaving only a single form, *brother*, as the root in both the singular and plural forms; that is, analogy levelled out the alternation left behind by the sound change (*brethren* survives only in a restricted context with specialised meaning). In this context, we should be careful to note that although analogical changes are usually not regular processes (which would occur whenever their conditions are found), they can sometimes be regular.

The history of the verb *to choose* in English shows the interaction of analogy and sound change well. Old English had the forms *cēosan* [čēosan] 'infinitive', *cēas* [čæas] 'past singular', *curon* [kuron] 'past plural' and *coren* [koren] 'past participle'. These come from the Proto-Indo-European root **geus-* 'to choose, to taste' (which had vowel alternations in different grammatical contexts which gave also **gous-* and **gus-* – the latter is the root behind Latin *gustus* 'taste' and the loanword *gusto* in English). From this Indo-European root came Proto-Germanic **keus-an* (and its alternates in different grammatical contexts,

**kaus-* and **kuz-*). The differences in the consonants among the Old English forms of 'to choose' come from two sound changes. The past plural and past participle forms had undergone Verner's law (see Chapter 5), which changed the **s* to **z* when the stress followed (as it did in the 'past plural' and 'past participle' in Pre-Germanic times), and then intervocalic *z* changed to *r* by rhotacism. The other change was the palatalisation in English of *k* to *ç* before the front vowels. Together, these changes resulted in different allomorphs with different consonants in the paradigm, *çVs-* and *kVr-*. Analogical levelling later eliminated these consonant differences, leaving Modern English *choose/chose/chosen* uniformly with the same consonants. (In dialects, even the difference in vowels of the strong verb pattern was sometimes levelled, to *choose/choosed/choosed* or similar forms, though these have not survived well in the face of competition from Standard English.) In this example, clearly the regular sound changes, rhotacism (after Verner's law) and palatalisation, created different allomorphs (irregularity in the paradigm for 'choose' in Old English), and subsequent analogical changes restored uniformity to the consonants of this paradigm.

A somewhat more complicated but more informative example is seen in Table 4.1.

TABLE 4.1: Latin rhotacism and the interaction of analogy with sound change

<i>Stage 1: Latin before 400 BC</i>		
honos 'honour'	labos 'labour'	nominative singular
honōsem	labōsem	accusative singular
honōsis	labōsis	genitive singular
<i>Stage 2: rhotacism: s > r /V__V</i>		
honos	labos	nominative singular
honōrem	labōrem	accusative singular
honōris	labōris	genitive singular
<i>Stage 3: after 200 BC, analogical reformation of nominative singular</i>		
honor	labor	nominative singular
honōrem	labōrem	accusative singular
honōris	labōris	genitive singular

In this example, the regular sound change in Stage 2, rhotacism ($s > r/V_V$), created allomorphy (*honos/honōr-*), that is, irregularity in the paradigm. Later, irregular analogy changed *honos* and *labos* (nominative singular forms) to *honor* and *labor*, both now ending in *r*, matching the *r* of the rest of the forms in the paradigm. Thus irregular analogy has

regularised the form of the root, eliminating the allomorphic alternations involving the final consonant of the root.

4.6 Analogical Models

In discussions of different sorts of analogical change, it is common to distinguish between *immediate models* and *non-immediate models*. These have to do with the place in the language where we find the 'relation of similarity' which is behind the analogical change. Cases involving *non-immediate models* are, like those of the Latin *labos* > *labor* of Table 4.1, due to the influence of whole classes of words or paradigms which do not normally occur in discourse in the near vicinity of the form that changes. In a case such as *honos* > *honor* under analogy from other forms in the paradigm, such as *honōrem*, *honōris* and so on, in normal discourse these forms would not occur adjacent to (or nearby) one another. For the majority of analogical changes no immediate model exists, but rather the model is a class of related forms.

An *immediate model* refers to a situation in which the 'relation of similarity' upon which the analogical change is based is found in the same speech context as the thing that changes. This refers to instances where the thing that changes and the thing that influences it to change are immediately juxtaposed to one another or are located very near each other in frequently repeated pieces of speech. Thus, analogical changes based on an immediate model are typically found in frequently recited routines, such as sequences of basic numbers, days of the week, months of the year, or in phrases used so frequently they can almost be taken as a unit. For example, month names are frequently said together in sequence; as a result, for many English speakers, because of the immediate model of *January, February* has changed to *Febuary* [fɛbjʊɛɹi], becoming more like *January* [jænjuɛɹi].

(1) In English, *female* ['fimeil] was earlier *femelle* [fɛ'mɛl]; however, in the immediate model of *male and female*, frequently uttered together, the earlier *femelle* (the Middle English form) changed to be more similar to *male*.

(2) Modern Spanish has the following days of the week which end in *s*: *lunes* 'Monday', *martes* 'Tuesday', *miercoles* 'Wednesday', *jueves* 'Thursday', *viernes* 'Friday'; however, *lunes* and *miercoles* come from forms which originally lacked this final *s*, but took it by analogy to other day names which ended in *s* in this immediate context, where the days of the week are commonly recited as a list. The day names are derived from shortened versions of the Latin names which originally contained

dies 'day', as in the following, where the last sound in these compounds reveals which forms contained the original final *s* and which lacked it: Spanish *lunes* < Latin *dies lunae* 'moon's day', *martes* < *dies martis* 'Mars' day', *miércoles* < *dies mercuri* 'Mercury's day', *jueves* < *dies jovis* 'Jupiter's day', *viernes* < *dies veneris* 'Venus' day'.

(3) Many examples of analogical changes based on an immediate model are found in numbers. For example, (1) Proto-Indo-European had **k^wetwer-* 'four', **penk^we-* 'five'; **p* became Germanic **f* by Grimm's law, and **k^w* should have become **h^w*, but we get *four* (with *f*, not expected *whour*) by influence from the *f* of following *five*. (2) Latin *quinque* /k^wink^we/ 'five' (from **penk^we-*) may be due in part to influence from preceding *quattuor* 'four' (from **k^wetwer-*). (3) In some Greek dialects, the sequence *hepta* 'seven', *oktō* 'eight' has become *hepta*, *hoktō*; in others, *oktō* has become *optō* 'eight', becoming more like the preceding *hepta* 'seven'. (4) In Slavic, originally 'nine' began with *n-* and 'ten' with *d-*, but they shifted so that 'nine' now begins with *d-*, making it more similar to following 'ten', as in Russian *d^jev^jat^j* 'nine' (< Proto-Indo-European **newn⁹*), *d^jes^jat^j* 'ten' (< Proto-Indo-European **dekm⁹*).

The numbers in several Mayan languages illustrate this tendency for numbers counted in sequence to influence each other, as immediate models for analogical change. For example, Poqomchi' numbers have come to have the same vowel in *kiʔi:ɓ* 'two', *ifi:ɓ* 'three', *kixi:ɓ* 'four', from earlier forms with distinct vowels: Proto-K'ichean **kaʔi:ɓ* 'two', **ofi:ɓ* 'three', **kaxi:ɓ* 'four'. In Q'eqchi', 'ten' has been influenced by 'nine': *beleheb* 'nine', *laxe:ɓ* 'ten', from Proto-K'ichean **be:lexeɓ* 'nine', **laxux* 'ten'. The Proto-Mayan forms **waq-* 'six' and **huq-* 'seven' have influenced each other in several Mayan languages: for example, the *w* of 'six' has influenced 'seven' to take *w* instead of its original **h*, as seen in Teco *wu:q* 'seven' and Tzotzil *wuk* 'seven'.

(4) An often-repeated example is Cicero's *senātī populīque Romanī* 'of the Roman senate and people', where *senātūs* 'senate (genitive singular)' is expected. In this case, different noun classes are involved, which had different 'genitive singular' forms:

'nominative singular':	animus 'soul, heart'	senātus 'senate'
'genitive singular':	animī	senātūs

The *senātus* class was small, and only a few nouns belonged to it. The class to which *animus* belonged was much larger. A frequent phrase, in the nominative case, was *senātus populusque romanus* 'the Roman senate and people' (the clitic *-que* means 'and'). Cicero gave it in the

genitive case, not with expected *senātūs* 'senate (genitive singular)', but *senatī* based on the immediate model of *populī* 'people (genitive singular)' in this phrase (compare Paul 1920: 106).

4.7 Other Kinds of Analogy

Many different kinds of change are typically called analogy; some of these have little in common with one other. It is important to have a general grasp of these various kinds of changes which are all lumped together under the general heading of analogy, for these terms are used very frequently in historical linguistic works. As pointed out above, the proportional analogical changes which involve levelling and extension, though often irregular, can in some instances be quite regular and systematic. Most of the other kinds of analogy, normally considered non-proportional, are mostly irregular and sporadic (and many of these can be proportional, too). There is nothing particularly compelling about this classification of kinds of analogical changes. The names are standard, but one type is not necessarily fully distinct from another, so that some examples of analogical changes may fit more than one of these kinds of change.

4.7.1 Hypercorrection

Hypercorrection involves awareness of different varieties of speech which are attributed different social status. An attempt to change a form in a less prestigious variety to make it conform with how it would be pronounced in a more prestigious variety sometimes results in overshooting the target and coming up with what is an erroneous outcome from the point of view of the prestige variety being mimicked. That is, hypercorrection is the attempt to correct things which are in fact already correct and which already match the form in the variety being copied, resulting in overcorrection and getting the form wrong.

(1) Some dialects in the western United States have: *lawnd* < *lawn*; *pawnd* (shop) < *pawn*, *drownd* (present tense)/*drownded* (past tense) < *drown/drowned*. These changes came about by hypercorrection in an overzealous attempt to undo the effects of the loss of final *d* after *n*, found to one extent or another in many varieties of English, for example, *san'* for *sand*, *fin'* for *find*, *roun'* for *round*, and so on.

(2) The frequently heard instances in English of things like *for you and I* for what in Standard English is *for you and me* involve hypercorrection; schoolteachers have waged war on the non-standard use of *me*

in subject positions, in instances such as *me and Jimmy watched 'Star Trek'* and *me and him ate popcorn* and so on. Speakers, in attempting to correct these to *I* when it is part of the subject of the clause, sometimes go too far and hypercorrect instances of *me* in direct or indirect objects to *I*, as in *Maggie gave it to Kerry and I*.

(3) Some English dialects in the southern United States have *umbrel-low* for 'umbrella' and *pillow* for 'pillar', a hypercorrection based on the less prestigious pronunciations of words such as *fella* and *yella*, changing to match to more formal (more prestigious) *fellow* and *yellow*.

(4) In many rural Spanish dialects, *d* before *r* has changed to *g* (*d* > *g* / __ *r*), as in: *magre* 'mother' (< *madre*), *pagre* 'father' (*padre*), *piegra* 'stone' (*piedra*), *Pegro* 'Pedro'. Sometimes speakers of these dialects attempt to change these *gr* pronunciations to match the standard and prestigious *dr* counterpart; however, in doing this, they sometimes hypercorrect by changing instances of *gr* to *dr* where the standard language in fact has *gr*, as for example *suedros* 'parents-in-law', where Standard Spanish has *suegros*, and *sadrado* 'sacred' instead of Standard *sagrado*.

(5) Standard Finnish has /*d*/, but many regional dialects do not; several have /*r*/ instead. An attempt to correct dialectal *suren* 'wolf (accusative singular)' to Standard Finnish *suden* would work out well through the replacement of dialect *r* by *d*. However, this sort of substitution leads to hypercorrections such as *suuden* 'big' (accusative singular) where Standard Finnish actually does have /*r*/, *suuren* (Ravila 1966: 57).

(6) In regional dialects of Spanish, *f* has become *x* before *u*, and this leads to the following sorts of hypercorrections, since the standard language preserves *f* in these cases, but also has other legitimate instances of *xu* as well (where [x] is spelled in Spanish with *j*): *fugo* < *jugo* 'juice', *fueves* < *jueves* 'Thursday', *fuicioso* < *juicioso* 'judicious'.

4.7.2 Folk etymology (popular etymology)

We might think of folk etymologies as cases where linguistic imagination finds meaningful associations in the linguistic forms which were not originally there and, on the basis of these new associations, either the original form ends up being changed somewhat or new forms based on it are created.

(1) An often-cited example is that of English *hamburger*, whose true etymology is from German *Hamburg* + *-er*, 'someone or something from the city of Hamburg'; while hamburgers are not made of 'ham',

speakers have folk-etymologised *hamburger* as having something to do with *ham* and on this basis have created such new forms as *cheeseburger*, *chiliburger*, *fishburger*, *Gainsburgers* (a brand of dog food in North America), just *burger*, and so on.

(2) In Spanish, *vagabundo* 'vagabond, tramp' has given rise also to *vagamundo* (same meaning), associated by speakers in some way with *mundo* 'world' and *vagar* 'to wander, roam, loaf', since a tramp wanders about in the world.

(3) Jocular Spanish has created *indiosingracia* 'idiosyncrasy' (for *idiosincrasia*), based on *indio* 'Indian' + *sin* 'without' + *gracia* 'grace'.

(4) The original name of the city of *Cuernavaca* in Mexico was *kwawnawak* in Nahuatl, but it was folk-etymologised by the Spanish as *cuernavaca*, based on *cuerno* 'horn' + *vaca* 'cow', though the place had no connection with either 'horns' or 'cows'. Its true etymology is Nahuatl *kwaw-* 'trees' + *nāwak* 'near, adjacent to', that is, 'near the trees'.

(5) (*Beef*) *jerky*, *jerked beef* in English comes from Spanish *charqui*, which Spanish borrowed from Quechua *č'arqi* – nothing is 'jerked' in the preparation of this dried meat, as the folk etymology seems to assume.

(6) *Handiwork* comes from Old English *handgeweorc*, composed of *hand* 'hand' + *geweorc* 'work (collective formation)', where *ge* > *y* [*j*] or *i* in Middle English, and then was lost. The word was reformulated by folk etymology in the sixteenth century on the basis of *handy* + *work* (compare Palmer 1972: 240).

(7) Many today (mis)spell *harebrained* as *hairbrained*, apparently having shifted the original etymology from 'one having a brain like a hare (rabbit)' to a new folk etymology based on *hair*, 'one having a brain associated in some in way with hair'.

(8) Some dialects of English have *wheelbarrel* for *wheelbarrow*, folk-etymologising it as having some association with *barrel*.

(9) Some speakers have changed *cappuccino* to *cuppacino*, influenced analogically by the word *cuppa* 'cup of tea', unknown in American English but widely used elsewhere, from *cup of (tea or coffee)*; a seven-year-old boy called it *caffeccino* (based on *coffee*). Compare also such blends – see below – as *mochaccino*, *muggaccino* and *cybercino* (involving a coffeeshop with World Wide Web access for its customers).

(10) Old Spanish *tiniebras* 'darkness' changed to Modern Spanish *tinieblas* through the folk-etymological assumption that it had something to do with *niebla* 'fog'.

(11) The true etymology of English *outrage* has nothing to do with *out* or *rage*, which are due to folk etymology. Rather, *outrage* is in origin a

borrowing from French *outrage* 'outrage, insult', which is based on Latin *ultrā* 'beyond' + the nominalising suffix *-agium* (cf. *-age*).

4.7.3 Back formation

In back formation (*retrograde* formation, a type of *folk etymology*), a word is assumed to have a morphological composition which it did not originally have, usually a root plus affixes, so that when the affixes are removed, a new root is created, as when children, confronted with a plate of pieces of cheese, often say 'can I have a chee?', assuming that *cheese* is the plural form, and therefore creating the logical singular root, *chee*, by removing the final *s*, which they associate with the *s* of plural. Examples which result in permanent changes in languages are quite common.

(1) *Cherry* entered English as a loan from Old French *cheris* (Modern French *cerise*) where the *s* was part of the original root, but was interpreted as representing the English 'plural', and so in back formation this *s* was removed, giving *cherry*.

(2) English *pea* is from Old English *pise* 'singular'/'*pisan* 'plural'; later the final *s* of the singular was reinterpreted as 'plural' and the form was backformed to *pea*. Compare *pease-pudding* and *pease porridge* (preserved in the nursery rhyme, 'Pease porridge hot, pease porridge cold, . . .'), which retain the *s* of the earlier singular form.

(3) A number of new English verb roots have been created by back formations based on associations of something in the form of the original noun root with a variant of *-er* 'someone who does the action expressed in the verb': *to burgle* based on *burglar*; *to chauff* 'to drive someone around, to chauffeur', based on *chauffeur* (*-eur* reinterpreted as English *-er* 'agent'), *to edit* from *editor*; *to escalate* based on *escalator*; *to lech* from *lecher*; *to orate* backformed from *orator*; *to peddle* based on *pedlar*; *to sculpt* from *sculptor*.

(4) Some varieties of English have a verb *to orientate*, backformed from *orientation* (competing with or replacing Standard English *to orient*). *Disorientated* is less established, but is sometimes said, derived analogically from *orientated*.

(5) Swahili *kitabu* 'book' is originally a loanword from Arabic *kitab* 'book'. However, on analogy with native nouns such as *ki-su* 'knife'/'*vi-su* 'knives' (where *ki-* and *vi-* represent the noun-class prefixes for which Bantu languages are well known), Swahili has backformed *kitabu* by assuming that its first syllable represents the *ki-* singular noun-class prefix and thus creating a new plural in *vitabu* 'books'.

4.7.4 Metanalysis (reanalysis)

Traditionally two things are treated under the title of metanalysis, *amalgamation* and *metanalysis proper* (today more often called *reanalysis*). Since amalgamation is also a kind of lexical change, it is not treated here, but rather in Chapter 10. *Metanalysis* is from Greek *meta* 'change' + *analysis* 'analysis', and as the name suggests, metanalysis involves a change in the structural analysis, in the interpretation of which phonological material goes with which morpheme in a word or construction.

(1) English provides several examples: *adder* is from Old English *næddre*; the change came about through a reinterpretation (reanalysis) of the article-noun sequence *a* + *næddre* as *an* + *adder* (compare the German cognate *Natter* 'adder, viper'). English has several examples of this sort. *Auger* is from Middle English *nauger*, *naugur*, Old English *nafo-gār* (*nafo-* 'nave [of a wheel]' + *gār* 'piercer, borer, spear', literally 'nave-borer'). *Apron* is from Middle English *napron*, originally a loan from Old French *naperon*, a diminutive form of *nape*, *nappe* 'tablecloth'. The related form *napkin* (from the French *nape* 'tablecloth' + *-kin* 'a diminutive suffix', apparently ultimately from Dutch) still preserves the original initial *n-*. *Umpire* < *noumpere* (originally a loanword from Old French *nonper* 'umpire, arbiter', *non* 'not' + *per* 'peer'). Finally, *newt* is from Middle English *ewt* (*an* + *ewt* > *a* + *newt*).

(2) Shakespeare (in *King Lear* I, 4, 170) had *nuncle* 'uncle', a form which survives in dialects today. It is derived from a metanalysis based on the final *-n* of the possessive pronouns *mine* and *thine* before it was lost, *mine* + *oncle* > *mine noncle* > *my nuncle*.

(3) Latin *argent-um* 'silver' and *argent-arius* 'silversmith' became in French *argent* [arʒã] 'silver, money' and *argentier* [arʒâtje] (with the analysis *argent* + *ier*); however, a reanalysis of this form as *argen*+*tier* is the basis of the *-tier* of newer forms such as *bijoutier* 'jeweller', based on *bijou* 'jewel'; another example is the addition of *-tier* to *café* to create *cafetier* 'cafe owner', based on *cabaretier* 'cabaret owner, publican, innkeeper', which bears what was originally the *-ier* suffix, construed as *-tier* from comparison with *cabaret* [kabare] 'cabaret, tavern, restaurant'.

(4) Swedish *ni* 'you' (plural, formal) comes from Old Swedish *I* 'you', where it often came after verbs which ended in *-n* 'plural agreement' and the *-n* + *I* combination was reinterpreted as together being the pronoun *ni*, as in *veten I* > *veten ni* > *vet ni* 'you know', *vissten I* > *visten ni* > *visste ni* 'you knew' (Wessén 1969: 219).

Reanalysis is one of the most important mechanisms of syntactic change, and is treated in more detail in Chapter 9.

4.7.5 Blending (or contamination)

In *blends*, pieces of two (or more) different words are combined to create new words. Usually the words which contribute the pieces that go into the make-up of the new word are semantically related in some way, sometimes as synonyms for things which have the same or a very similar meaning. Some blends are purposefully humorous or sarcastic in their origin; others are more accidental, sometimes thought to originate as something like slips of the tongue which combine aspects of two related forms which then catch on. Examples of blending and contamination are sometimes treated as lexical change (see Chapter 10). The following English examples illustrate these various origins and outcomes.

(1) Often-cited examples include: *smog* < *smoke* + *fog*; *brunch* < *breakfast* + *lunch*; *motel* < *motor* + *hotel*, *splatter* < *splash* + *spatter*; *flush* < *flash* + *blush*.

(2) (*computer*) *bit* < *binary digit*.

(3) Based on a portion of *magazine*: *fanzine* (fan group newsletter-magazine), *videozine* (videotape featuring items comparable to print magazines), *webzine* (Internet sites in magazine format).

(4) A suffix-like element was created on the basis of a portion of *marathon*: *telethon*, *walkathon*, *bik(e)athon*, *danceathon*, and so on.

(5) *newscast* < *news* + *broadcast*; also *sportscast*, *sportscaster*.

(6) Based on part of *alcoholic*: *workaholic*, *chocaholic*, *foodaholic*, *gumaholic*, *shoppaholic*, and so on.

(7) *infomercial* < *information* + *commercial*; *infotainment* < *information* + *entertainment*.

(8) From combinations based on *hijack*: *skyjack(ing)* and *car-jack(ing)*.

(9) *neither* < earlier *nouther* through influence from *either*.

(10) *-gate* (a new suffix-like element created on the basis of *Watergate* of the Richard Nixon Watergate scandal): *Contragate*, *Koreagate*, *Irangate*, *Camillagate* (involving Prince Charles's close friend, Camilla Parker Bowles).

Some non-English examples are:

(11) An often-cited case: Latin *reddere* 'to give back' and *pre(he)ndere* 'to take hold of, seize' influenced one another and resulted in the blend in Romance languages illustrated by Spanish *rendir* 'to yield, produce, render', Italian *rendere* 'to render, yield', French *rendre* 'to render' (English *render* is a borrowing from French).

(12) Spanish jocular *indio* 'language' (from Cantinflas' films) is a blend of *indio* 'Indian' and *idioma* 'language'.

(13) Names of languages which borrow extensively from others or

are highly influenced by others are the sources of such blends as *Spanglish* < *Spanish* + *English*, *Finnglish* < *Finnish* + *English*; *manglish* was created in feminist discourse to reflect male biases in English, < *man* + *English*; *Franglais* < *français* 'French' + *anglais* 'English'.

There are also syntactic blends. Neogrammarians presented many examples (for example, Paul 1920: 165). Some are:

(1) *I'm friends with him*, from a contamination based on *I'm a friend with him* and *we are friends* (Paul 1920: 150).

(2) Non-standard German *mich freut deines Mutes*, from a contamination of the two perfectly normal constructions *ich freu-e mich dein-es Mut-es* [I please-first.person me.Reflexive your-Genitive courage-Genitive], roughly 'I'm pleased over your courage', and *mich freut dein Mut* [me.Accusative please-third.person your spirit], roughly 'your spirit pleases me' (Paul 1920: 149).

(3) Finnish has two alternative constructions for verbs meaning 'to command, order', as in 'she told/commanded the boy to come':

hän käski poikaa tulemaan (*poika-a* 'boy-Partitive.Singular' *tule-ma-an* 'come-third.Infinitive-Illative.case')

hän käski pojan tulla (*poja-n* 'boy-Genitive.Singular' *tul-la* 'come-first.Infinitive').

These two have blended for some dialects to give a third construction:

käski pojan tulemaan (*poja-n* 'boy-Genitive.Singular' *tule-ma-an* 'come-third.Infinitive-Illative') – not accepted in Standard Finnish.

4.8 Exercises

Exercise 4.1

Observe the language of your friends and of newspapers, television and so on, and attempt to find examples of your own of the various sorts of analogy.

Exercise 4.2 Identifying analogical changes

Determine what kind of analogical change is involved in the following examples. Name the kind of change, and attempt to explain how it came about, if you can.

(1) In some dialects of English, the pattern *bring/brought/brought* has become *bring/brang/brung*.

(2) Where Standard English has *drag/dragged*, some varieties of English have *drag/drug*. It appears in this case that the Standard English pattern is older.

(3) Old Spanish *sinistro* 'left' changed from Latin *sinister* 'on the left' to take on *ie* under the influence of the antonym *diestro* 'right', since *diestro* and *sinistro* frequently occurred together.

(4) In many Spanish dialects, an intervocalic *d* is regularly lost, as in *mercado* > *mercao* 'market'; in some instances, however, there are changes of the following sort: dialect *bacalado* < Standard *bacalao* 'codfish'; dialect *Bilbado* < Standard *Bilbao* (a place name).

(5) In the Dominican Republic, forms such as Standard Spanish *atras* 'behind' become *astras*; in this variety of Spanish, preconsonantal *s* is often lost, as in *ata* < *asta* (spelled *hasta*) 'until'.

(6) English *Jerusalem artichoke* (a kind of sunflower, with some similarities to an artichoke) is in origin from Italian *girasóle articiocco*, where Italian *girasóle* /*ʝirasóle*/ contains *gira-* 'turn around, revolve, rotate' + *sole* 'sun', and *articiocco* 'artichoke', with nothing associated with *Jerusalem*.

(7) In English, *Key West* (in Florida) comes from the Spanish name *cayo hueso*, where *cayo* is 'key, small island' and *hueso* is 'bone'.

(8) English *heliport* < *helicopter* + *airport*; *snazzy* < *snappy* + *jazzy*; *jumble* < *jump* + *tumble*.

(9) Colloquial and regional varieties of Spanish have *haiga* where Standard Spanish has *haya* (subjunctive, 'there may be') and *vaiga* where Standard Spanish has *vaya* (subjunctive, 'may go'). These have been influenced by Standard Spanish verb forms such as *traiga* (subjunctive of *traer* 'to bring', 'may bring') and *caiga* (subjunctive of *caer* 'to fall', 'may fall').

(10) Middle English had *help-* 'present tense', *holp* 'past tense'; Modern English has *help*, *helped* for these.

(11) English *emote* is derived from *emotion*; *to enthuse* is derived from *enthusiastic*.

(12) Many varieties of English have a new verb *to liaise* based on *liaison*.

(13) English *to diagnose* is derived from *diagnosis*.

(14) Finnish *rohtia* 'to dare' resulted from both *rohjeta* 'to be bold enough, to dare' and *tohtia* 'to dare'.

Exercise 4.3 Analogical changes in Mayan languages

Name and attempt to explain where possible the analogical changes illustrated in the following examples from various Mayan languages.

(1) Uspanteko *ʃi:k* 'hawk' (compare Proto-K'ichean **ʃihk* 'hawk', **ʃi:k* 'wing'). (NOTE: the loss of *h* is not relevant to this problem; *k* = a glottalised velar stop.)

Analogical Change

(2) Tzeltal dialects *ik'bin* 'weasel' (other Mayan languages have *sahbin* or *saqbin*; compare Proto-Mayan **saq* 'white', Tzeltal *ik* 'black').

(3) Kaqchikel *-ifqaʔil* 'wife' became *-ifxayil* in some dialects (compare *if-* 'female prefix', *xay* 'house' + *-il* 'suffix' ('pertaining to')).

(4) Yucatec *ič* 'face', *w-ič* 'my face' (compare earlier form **wič* 'face', **in-wič* 'my face'; note *w-* 'my' before vowels, *in-* 'my' before consonants).

5

The Comparative Method and Linguistic Reconstruction

Linguistic history is basically the darkest of the dark arts, the only means to conjure up the ghosts of vanished centuries. With linguistic history we reach furthest back into the mystery: humankind.

(Cola Minis 1952: 107 [Euphorion 46])

5.1 Introduction

The comparative method is central to historical linguistics, the most important of the various methods and techniques we use to recover linguistic history. In this chapter the comparative method is explained, its basic assumptions and its limitations are considered, and its various uses are demonstrated. The primary emphasis is on learning how to apply the method, that is, on how to reconstruct. The comparative method is also important in language classification, in linguistic prehistory, in research on distant genetic relationships, and in other areas; these topics are treated in later chapters.

We say that languages which belong to the same language family are *genetically related* to one another: this means that these related languages derive from (that is, ‘descend’ from) a single original language, called a *proto-language*. In time, dialects of the proto-language develop through linguistic changes in different regions where the language was spoken – all languages (and varieties of language) are constantly changing – and then later through further changes the dialects become distinct languages.

The aim of reconstruction by the comparative method is to recover as

much as possible of the ancestor language (the proto-language) from a comparison of the descendant languages, and to determine what changes have taken place in the various languages that developed from the proto-language. The work of reconstruction usually begins with phonology, with an attempt to reconstruct the sound system; this leads in turn to reconstruction of the vocabulary and grammar of the proto-language. As can be seen from the way languages are classified, we speak of linguistic relationships in terms of kinship; we talk about 'sister languages', 'daughter languages', 'parent language' and 'language families'. If reconstruction is successful, it shows that the assumption that the languages are related is warranted. (See Chapter 6 for family-tree classification and Chapter 13 for methods of determining whether languages are related.)

With the genealogical analogy of your family tree in mind, we can see how modern Romance languages have descended from spoken Latin (better said, from Proto-Romance, which is reconstructed via the comparative method), illustrated in the family tree for the Romance languages in Figure 5.1. (The biological kinship terms added here under the language names in Figure 5.1 are just a trick to reveal the pedigree of the languages; in this case the focus is on Spanish. This is certainly not conventionally done in linguistic family trees.)

By comparing what these sister languages inherited from their ancestor, we attempt to reconstruct the linguistic traits which Proto-Romance possessed. (Proto-Romance is equivalent to the spoken language at the time when Latin began to diversify and split up into its descendant branches, essentially the same as Vulgar Latin at the time. The 'Vulgar' of Vulgar Latin means 'of the people'.) If we are successful, what we reconstruct for Proto-Romance by the comparative method should be similar to the Proto-Romance which was actually spoken at the time before it split up into its daughter languages. Of course, our success is dependent upon the extent to which evidence of the original traits is preserved in the descendant languages (daughter languages) which we compare and upon how astute we are at applying the techniques of the comparative method, among other things. In this case, since Latin is abundantly documented, we can check to see whether what we reconstruct by the comparative method accurately approximates the spoken Latin we know about from written sources. However, the possibility of checking our reconstructions in this way is not available for most language families, for whose proto-languages we have no written records. For example, for Proto-Germanic (from which English descends), there are no written attestations at all, and the language is known only from comparative reconstruction.

Currently existing languages which have relatives all have a history which classifies them into language families. By applying the comparative method to related languages, we can postulate what that common earlier ancestor was like – we can reconstruct that language. Thus, comparing English with its relatives, Dutch, Frisian, German, Danish, Swedish, Icelandic and so on, we attempt to understand what the proto-language, in this case called ‘Proto-Germanic’, was like. Thus, English is, in effect, a much-changed ‘dialect’ of Proto-Germanic, having undergone successive linguistic changes to make it what it is today, a different language from Swedish and German and its other sisters, which underwent different changes of their own. Therefore, every proto-language was once a real language, regardless of whether we are successful at reconstructing it or not.

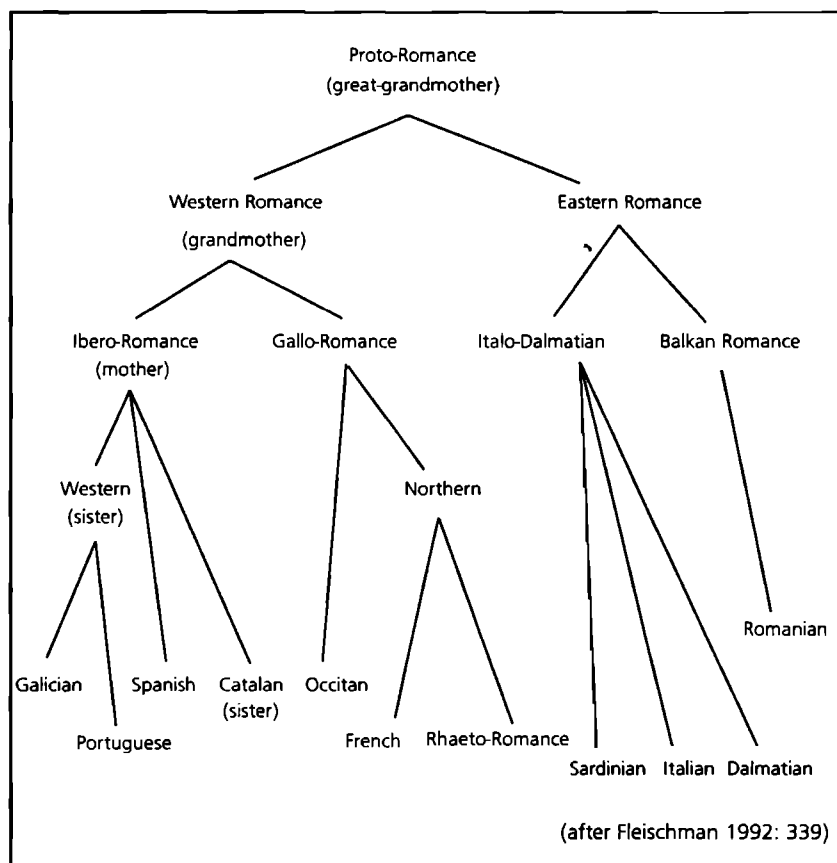


FIGURE 5.1: Proto-Romance family tree (and Spanish's genealogy)

5.2 The Comparative Method Up Close and Personal

To illustrate the application of the comparative method, let's begin by applying it briefly in a simplified fashion to some Romance languages. (There are many more Romance languages, but for illustration's sake, this miniature introduction is limited to just a few of the better-known of these.) First, consider some data, the words compared among Romance languages given in Table 5.1. (The first line represents conventional spelling; the second is phonemic.)

TABLE 5.1: Some Romance cognate sets

<i>Italian</i>	<i>Spanish</i>	<i>Portuguese</i>	<i>French</i>	<i>(Latin)</i>	<i>English gloss</i>
1. capra /kapa/	cabra /kabra/	cabra /kabra/	chèvre /ʃɛvr(ə)/	capra	goat
2. caro /karo/	caro /karo/	caro /karu/	cher /ʃɛr/	caru	dear
3. capo /kapo/ 'main, chief'	cabo /kabo/ 'extremity'	cabo /kabu/ 'extremity'	chef /ʃɛf/ 'main, chief'	caput	head, top
4. carne /karne/	carne /karne/	carne /karne/	chair /ʃɛr/ (cf. Old French charn /čarn/	carō/carn-	meat, flesh
5. cane /kane/	can (archaic) /kan/	cão /kãw/	chien /ʃjɛ/	canis	dog

Latin is *not* a Romance language; the Latin forms in Table 5.1 are presented only so that ultimately we can check the reconstructions which we postulate for Proto-Romance to see how close they come to the forms in the actual spoken proto-language, which was essentially the same as Latin in this case.

To understand the comparative method and to be able to apply it, we need to control some concepts and technical terms:

Proto-language: (1) the once spoken ancestral language from which daughter languages descend; (2) the language reconstructed by the comparative method which represents the ancestral language from which the compared languages descend. (To the extent that the reconstruction by the comparative method is accurate and complete, (1) and (2) should coincide.)

Sister language: languages which are related to one another by virtue of having descended from the same common ancestor (proto-language) are sisters; that is, languages which belong to the same family are sisters to one another.

Cognate: a word (or morpheme) which is related to a word (morpheme) in sister languages by reason of these forms having been inherited by these sister languages from a common word (morpheme) of the proto-language from which the sister languages descend.

Cognate set: the set of words (morphemes) which are related to one another across the sister languages because they are inherited and descend from a single word (morpheme) of the proto-language.

Comparative method: a method (or set of procedures) which compares forms from related languages, *cognates*, which have descended from a common ancestral language (the *proto-language*), in order to postulate, that is *to reconstruct*, the form in the ancestral language.

Sound correspondence (also called *correspondence set*): in effect, a set of 'cognate' sounds; the sounds found in the related words of cognate sets which correspond from one related language to the next because they descend from a common ancestral sound. (A sound correspondence is assumed to recur in various cognate sets.)

Reflex: the descendant in a daughter language of a sound of the proto-language is said to be a *reflex* of that original sound; the original sound of the proto-language is said to be reflected by the sound which descends from it in a daughter language.

For ease of description, we will talk about 'steps' in the application of the comparative method. Strictly speaking though, it is not always necessary to follow all these steps in precisely the sequence described here. In practice, the comparative linguist typically jumps back and forth among these steps.

Step 1: Assemble cognates

To begin to apply the comparative method, we look for potential cognates among related languages (or among languages for which there is reason to suspect relatedness) and list them in some orderly arrangement (in rows or columns). In Table 5.1, this step has already been done for you for the few Romance cognates considered in this exercise. In general, it is convenient to begin with cognates from 'basic vocabulary' (body parts, close kinship terms, low numbers, common geographical terms), since these resist borrowing more than other sorts of vocabulary, and for the comparative method we want to compare only true cognates,

words which are related in the daughter languages by virtue of being inherited from the proto-language. For successful reconstruction, we must eliminate all other sets of similar words which are not due to inheritance from a common ancestor, such as those which exhibit similarities among the languages because of borrowing, chance (coincidence) and so on (for details, see Chapter 13). Ultimately, it is the systematic correspondences which we discover in the comparative method (in the following steps) which demonstrate true cognates.

Step 2: Establish sound correspondences

Next, we attempt to determine the sound correspondences. For example, in the words for 'goat' in cognate set 1 in Table 5.1, the first sound in each language corresponds in the way as indicated in SOUND CORRESPONDENCE 1 (here now we concentrate on the phonemic representation of the sound and not on the conventional spelling):

Sound correspondence 1:

Italian *k*- : Spanish *k*- : Portuguese *k*- : French *f*-

Note that historical linguists often use the convention of a hyphen after a sound to indicate initial position, as *k*- here signals initial *k*; a preceding hyphen indicates that the sound is word-final (for example, *-k*); and a hyphen both before and after refers to a medial sound, one found somewhere in the middle of a word but neither initially nor finally (for example, *-k-*).

It is important to attempt to avoid potential sound correspondences which are due merely to chance. For example, languages may have words which are similar only by accident, by sheer coincidence, as the case of Kaqchikel (Mayan) *mes* 'mess, disorder, garbage' : English *mess* ('disorder, untidiness'). To determine whether a sound correspondence such as that of SOUND CORRESPONDENCE 1 is real (reflecting sounds inherited in words from the proto-language) rather than perhaps just an accidental similarity, we need to determine whether the correspondence recurs in other cognate sets. In looking for further examples of this particular Romance sound correspondence, we find that it recurs in the other cognate sets (2–5) of Table 5.1, all of which illustrate SOUND CORRESPONDENCE 1 for their first sound. If we were to attempt to find recurrences of the seeming *m*- : *m*- correspondence between Kaqchikel and English (seen in the comparison of their words meaning 'mess'), we would soon discover that there are no other instances of it, that it does not recur, as illustrated by the compared words of Table 5.2, where the

English forms begin with *m*, but the Kaqchikel forms begin with various sounds.

TABLE 5.2: Kaqchikel–English comparisons

<i>English</i>	<i>Kaqchikel</i>
man	ač'i
mouse	č'oy
moon	qatiʔt
mother	nan

Of course, in principle in a situation such as this, it is possible that the compared languages could be related but that we accidentally chose the few words to compare in Table 5.2 where one or the other of the related languages has not retained the cognate due to borrowing or lexical replacement. To be certain that this is not the case, we would need to look at many comparisons (not just the handful presented in Table 5.2 for illustration's sake). However, in the case of English and Kaqchikel lexical comparisons, we will never find more than one or two which exhibit what initially might have been suspected of being an *m* : *m*-correspondence based on the words meaning 'mess' in the two languages, and this is precisely because these two languages are not genetically related and therefore the *m* : *m* matching does not recur and is not a true correspondence. Similarly, we need to attempt to eliminate similarities found in borrowings which can seem to suggest sound correspondences. Usually (though not always), loanwords do not exhibit the sort of systematic sound correspondences found in the comparison of native words among related languages, and loans involving basic vocabulary are much rarer than borrowings in other kinds of vocabulary (see Chapter 13 for details).

Given that SOUND CORRESPONDENCE 1 recurs frequently among the Romance languages, as seen in the forms compared in Table 5.1, we assume that this sound correspondence is genuine. It is highly unlikely that a set of systematically corresponding sounds such as this one could come about by sheer accident in a large number of words so similar in sound and meaning across these languages.

Step 3: Reconstruct the proto-sound

There is no fixed rule about what should be done next. We could go on and set up other sound correspondence sets and check to see that they recur; that is, we could repeat step 2 over and over until we have found

all the sound correspondences in the languages being compared. Or, we could go on to step 3 and attempt to reconstruct the proto-sound from which the sound in each of the daughter languages (represented in SOUND CORRESPONDENCE 1) descended. In the end, to complete the task, we must establish all the correspondences and reconstruct the proto-sound from which each descends, regardless of whether we do all of step 2 for each set first and then step 3 for all the sets, or whether we do step 2 followed by step 3 for each set and then move on to the next set, repeating step 2, then step 3. In either case, as we shall soon see, the initial reconstructions which we postulate based on these sound correspondences must be assessed in steps 5 and 6, when we check the fit of the individual reconstructed sounds which we initially postulate in step 3 against the overall phonological inventory of the proto-language and its general typological fit; it is often the case that some of the reconstructions for sounds postulated in step 3 need to be modified in steps 5 and 6.

The different sounds (one for each language compared) in the sound correspondence set reflect a single sound of the proto-language which is inherited in the different daughter languages; sometimes the sound is reflected unchanged in some daughters, though often it will have undergone sound changes in some (or even all) of the daughter languages which make it different from the original proto-sound. We reconstruct the proto-sound by postulating what the sound in the proto-language most likely was on the basis of the phonetic properties of the descendant sounds in the various languages in the correspondence set. The following are the general guidelines that linguists rely on to help them in the task of devising the best, most realistic reconstruction.

Directionality

The known directionality of certain sound changes is a valuable clue to reconstruction (see Chapter 2). By 'directionality' we mean that some sound changes which recur in independent languages typically go in one direction ($A > B$) but usually are not (sometimes are never) found in the other direction ($B > A$). Some speak of this as 'naturalness', some changes 'naturally' taking place with greater ease and frequency cross-linguistically than others. For example, many languages have changed $s > h$, but change in the other direction, $h > s$, is almost unknown. In cases such as this, we speak of 'directionality'. If we find in two sister languages the sound correspondence s in Language₁ : h in Language₂, we reconstruct $*s$ and postulate that in Language₂ $*s > h$. The alternative with $*h$ and the change $*h > s$ in Language₁ is highly unlikely,

since it goes against the known direction of change. Usually, the directionality has some phonetic motivation. Some idea of the typical direction of many of the more commonly recurring sound changes can be gathered from a look at the examples considered in Chapter 2.

In the case of SOUND CORRESPONDENCE 1, we know that the direction of change from *k* to *ʃ* is quite plausible and has been observed to occur in other languages, but that *ʃ* essentially never changes to *k*. Actually, even more typical would be for *k* to change to *ʃ* by first going through the intermediate stage of *č*, that is, *k* > *č* > *ʃ*; documentary evidence shows that the sound change in French did go through this intermediate *č* stage. Old French documents had for the words in Table 5.1: *čjevr*(ə) 'goat', *čjer* 'dear', *čjef* 'head', *čarn* 'meat' and *čjeŋ* 'dog'. This intermediate stage is preserved in many English loans from French from that time, for example, *chief* and *Charles* with [č], where more recent loans from the same French sources have [ʃ], the result of the later French change of *č* > *ʃ*, as in *chef* and *Charlene*, with [ʃ].

In another example of the way in which directionality aids in reconstruction, we know that very often voiceless stops (*p*, *t*, *k*) are voiced (*b*, *d*, *g*) between vowels. If we compare two related languages, Language₁ and Language₂, and we find intervocalic *-b-* in Language₁ corresponding to intervocalic *-p-* in Language₂, then we reconstruct **-p-* and assume that Language₁ underwent the common sound change of intervocalic voicing of stops (*p* > *b* / V__V, in this case). If we tried to reconstruct **-b-* in this situation, we would have to assume that Language₂ had changed *-b-* to *-p-*, but this goes against the direction most commonly taken in changes involving these sounds between vowels. This example comes up in SOUND CORRESPONDENCE 2 (below).

The phonetic motivation for the directionality in this case is clear. It is easy to voice stops between vowels, since vowels are inherently voiced, and therefore the change (1) *p* > *b* / V__V is very common, while it is not so easy to make stops voiceless between vowels, which makes the change (2) *b* > *p* / V__V very rare indeed – for (2) the vocal cords would be vibrating for the first vowel, then we would need to stop them from vibrating in order to produce the voiceless [p], and then start the vocal-cord vibration up again for the second vowel; for (1) we merely leave them vibrating for all three segments, the two vowels and the intervening [b]. The known directionality, then, with (1) encountered frequently across languages and (2) hardly at all, is natural and phonetically motivated. As a beginning linguist's experience with language changes and phonological systems increases, a stronger understanding of the directionality of changes develops.

Majority wins

Another guiding principle is that, all else being equal, we let the majority win – that is, unless there is evidence to the contrary, we tend to pick for our reconstructed proto-sound the particular sound in the correspondence set which shows up in the greatest number of daughter languages. Since in SOUND CORRESPONDENCE 1, Italian, Spanish and Portuguese all have *k*, and only French diverges from this, with *f*, we would postulate **k* for the Proto-Romance sound, under the assumption that the majority wins, since the majority of the languages have *k* in this correspondence set. This reconstruction assumes that French underwent the sound change **k* > *f*, but that the other languages did not change at all, **k* remaining *k*. The underlying rationale for following the majority-wins principle is that it is more likely that one language would have undergone a sound change (in this case, French **k* > *f*) than that several languages would independently have undergone the sound change. In this case, if **f* were postulated as the proto-sound, it would be necessary to assume that Italian, Spanish and Portuguese had each independently undergone the change of **f* > *k*.

Caution is necessary, however, in the use of the majority-wins guideline to reconstruction. Some sound changes are so common (and languages undergo them so easily) that several languages might undergo one of these kind of changes independently of one another (for example, loss of vowel length, nasalisation of vowels before nasal consonants, and so on). It is also possible that only one of the daughter languages might have preserved the original sound unchanged while the others all changed it in some way. It is also possible that all the daughter languages may undergo various changes so that none reflects the proto-sound unchanged. Clearly, in these situations there is no majority to do the winning. Moreover, majority rule may not work if some of the languages are more closely related to one another. If some of the languages belong to the same branch (subgroup) of the family (see Chapter 6), then they have a more immediate ancestor which itself is a daughter of the proto-language. This intermediate language (a parent of its immediate descendants but itself a daughter of the proto-language) could have undergone a change and then later split up into its daughters, the members of the subgroup, and each of these would then inherit the changed sound that their immediate common ancestor (itself once a single daughter of the proto-language which subsequently split up) had undergone. For example, French, Spanish and Portuguese all share some sounds which are the results of sound changes that took place in Western Romance before it split up further into French, Spanish and

Portuguese. Italian does not share these because it comes from a separate branch of Romance. For example, Western Romance changed syllable-final *k* to *j*, seen in Spanish, Portuguese and French, which separated from one another only after this Western Romance change had taken place, as in **lakte* > *laḵte* 'milk', which gives us French *lait*, Portuguese *leite* and Spanish *leche* (where later changes were *ai* > *ei* > *e* in these languages, and *ḵ* > *č* in Spanish); Italian (not a Western Romance language) underwent a different change, *kt* > *tt*, giving *latte* 'milk' – we see the results of these changes in choices of kinds of coffee on menus, with *café au lait* (French), *café latte* (Italian) and *café con leche* (Spanish). Now if we compare Italian *tt* with the *ḵt* of Portuguese, French and formerly also of Spanish, 'majority wins' would seem to suggest **ḵt* as the reconstruction with *j* > *t* / __ *t* in Italian; but knowing that Portuguese, Spanish and French are closely related, all members of the Western Romance branch, we no longer need to compare three separate instances of *ḵt* to one of *tt*, but only one *ḵt* case (the result of the single change, **kt* > *ḵt*, in Western Romance) to one *tt* case (in Italian). It is only with the aid of other information that we discover that the best reconstruction is **kt*, from which both the Italian and Western Romance languages departed due to their separate sound changes. As will be seen in Chapter 6, it is the results of the comparative method which provide the basis for arriving at the classification which tells us which of the related languages belong to the same branches of the family.

So, 'majority wins' is an important principle, but it is easily overridden by other considerations. Still, it would seem to work in the case of SOUND CORRESPONDENCE 1 above, suggesting **k* as the best reconstruction, since it is found in a majority of the languages compared.

Factoring in features held in common

We attempt to reconstruct the proto-sound with as much phonetic precision as possible; that is, we want our reconstruction to be as close as possible to the actual phonetic form of the sound as it was pronounced when the proto-language was spoken. We can never know for sure how accurately our reconstructed sound matches the actual sound of the formerly spoken proto-language, but in general, the more information available upon which to base the reconstruction, the more likely it is that we may be able to achieve a reasonably accurate reconstruction. We attempt to achieve as much phonetic realism as possible by observing what phonetic features are shared among the reflexes seen in each of the daughter languages in the sound correspondence. We determine which phonetic features are common to the reflexes in the daughter languages (and features which can be derived from others by the known direction

of sound changes, in Step 2), and then we attempt to reconstruct the proto-sound by building into it these shared phonetic features. To illustrate this, let us consider another sound correspondence from Table 5.1, seen to recur here in the words for (1) 'goat' and (2) 'head' (and in many other cognates not given in Table 5.1):

Sound correspondence 2:

Spanish *b* : Portuguese *b* : French *v* : Italian *p*

The reflexes in all four languages share the feature 'labial'; the Spanish, Portuguese and Italian reflexes share the feature 'stop' (phonemically). Factoring the features together, we would expect the proto-sound to have been a 'labial stop' of some sort, a *p* or *b*. Given that the reflex in Spanish, Portuguese and French is 'voiced', under the principle of 'majority wins' we might expect to reconstruct a 'voiced bilabial stop' (**b*). In this case, however, other considerations – especially directionality – override the majority-wins principle. The directionality is that it is easy for *p* to become voiced between voiced sounds (between vowels in cognate set 3, and between a vowel and *r* in cognate set 1 in Table 5.1), but the reverse is very rare. Therefore, by directionality, **p* is a better choice for the reconstruction, phonetically more plausible; Italian maintained *p* while the others underwent the change to voicing (**p > b* in Spanish and Portuguese; **p > v* in French, actually **p > b > v*). From directionality, we also know that stops frequently become fricatives between vowels (or between continuant sounds), but that fricatives rarely ever become stops in this environment. Thus, it is very likely that the French reflex *v* is the result of this sort of change. Taking these considerations into account, for correspondence set 2, we reconstruct **p* and postulate that in Spanish and Portuguese **p > b*, and French **p > v* (or **p > b > v*). SOUND CORRESPONDENCE 2, then, illustrates how the comparative linguist must balance the various rules of thumb for reconstruction, majority wins, directionality, and factoring in the features shared among the reflexes. (Ultimately, we find out that Western Romance underwent the change of **p > b* in this position, and then after Western Romance split up, the change of *b > v* in French took place. That is, taking the degree of relatedness (the subgrouping; see Chapter 6) into account, there is no longer a majority with the reflex *b*, but rather only Western Romance *b* as opposed to Italian *p*.)

Economy

What is meant by the criterion of economy is that when multiple alternatives are available, the one which requires the fewest independent changes is most likely to be right. For example, if for SOUND CORRESPONDENCE

1 we were to postulate $*\text{ʃ}$, this would necessitate three independent changes from $*\text{ʃ} > k$, one each for Italian, Spanish and Portuguese; however, if we postulate $*k$ for the Proto-Romance sound, we need assume only one sound change, $*k > \text{ʃ}$ in French. The criterion of economy rests on the assumption that the odds are greater that a single change took place than that three independent changes took place. Of course, sometimes independent changes do take place, so that the criterion does not always guarantee correct results; but all else being equal, the chances of a reconstruction which embodies more economical assumptions being correct are greater than for a reconstruction which assumes less economical developments. (See below for other examples of the use of the economy criterion.)

The other two general considerations (rules of thumb) which linguists use in reconstructing sounds involve checking to see whether the individual sounds postulated to represent the various sound correspondences fit the overall phonological pattern of the proto-language and to see whether this reconstructed pattern is consistent with linguistic universals and typological expectations. These are *phonological fit* and *typological fit* respectively (steps 5 and 6, below). These two considerations come into play mostly after the full set of sound correspondences has been dealt with and the overall inventory of reconstructed sounds that are being postulated can be considered. For this reason, let's deal first with the other correspondences of Table 5.1, and then come back to these two considerations later.

Let us continue steps 2 and 3, then, for the forms in Table 5.1, and establish the remaining sound correspondences illustrated in these forms and set up reconstructions for them. It does not matter in which order we investigate the sound correspondences. We could first look only at initial consonants for all of the cognate sets, then medial consonants, then final consonants, and finally the various vowels; or, we could proceed by investigating the sound correspondence representing the next sound (the second) in the first cognate set, then go on to the third sound in that set, and so on until all the sounds of that cognate set have been addressed, and then proceed to the next cognate set, dealing with each of the sound correspondences for each of the sounds found in that set in sequence (though some of these may recur in other cognate sets and thus may already have been established in the consideration of the previous cognate sets already dealt with). We continue in this way until all the recurring sound correspondences have been examined and proto-sounds to represent them have been postulated. In this way, we will eventually come to reconstruct the full inventory of sounds in the proto-language.

In the example in Table 5.1, let us continue with the corresponding sounds in cognate set 1, for 'goat'. The first vowel in the forms in cognate set 1 shows SOUND CORRESPONDENCE 3:

Sound correspondence 3:

Italian *a* : Spanish *a* : Portuguese *a* : French *ɛ*.

We check this to see if it recurs, and we see that it is also found in the other cognate sets of Table 5.1, for 'dear', 'head' and 'meat'. (It is also found again, in effect, in the last vowel of cognate set 1 for 'goat', though we must deal with the later change in French of final *ɛ* to *ə/Ø*.) Under the majority-wins principle, for this sound correspondence we reconstruct **a* for the Proto-Romance sound, assuming that French has undergone the sound change **a* > *ɛ*.

The third sound in cognate set 1 'goat' has, in fact, already been dealt with in SOUND CORRESPONDENCE 2 (where we reconstructed **p* for the correspondence set Spanish *b* : Portuguese *b* : French *v* : Italian *p*).

The next sound in the sequence of sounds in the 'goat' cognates gives correspondence set 4:

Sound correspondence 4:

Italian *r* : Spanish *r* : Portuguese *r* : French *r*

SOUND CORRESPONDENCE 4 also recurs, in 'goat', 'dear' and 'meat' (in Table 5.1). For it, we would postulate Proto-Romance **r*, under 'majority wins', since all the languages have this reflex. (To be absolutely accurate, we would have to deal with the fact that in Standard French the *r* became a uvular, but for now we ignore this detail.)

The last sound in 'goat' in effect repeats SOUND CORRESPONDENCE 3, although French later changed final *ɛ* further (to *ə* or *Ø*). Though technically this must be considered a separate sound correspondence, to make it easier we will just assume here that we would easily discover that the two correspondence sets, for the first and last vowel in the 'goat' cognate set, belong together due to a later conditioned change in French.

To complete the task, we would need to establish the sound correspondences for all the cognate sets and reconstruct sounds to represent them. For example, we would find:

Sound correspondence 5:

Italian *o* : Spanish *o* : Portuguese *u* : French *Ø*.

This recurs, as in 'dear', 'head'. For SOUND CORRESPONDENCE 5, we would reconstruct **o* (majority wins), assuming that Portuguese changed final **o* to *u*, and that French lost final **o*.

With more extensive data (many more cognate sets than presented in Table 5.1), we would confirm these reconstructions, with their attendant sound changes and the conditions under which they took place, and we would eventually find all the sound correspondences and postulate reconstructions for all the sounds of the proto-language and work out its phonemic inventory and phonological patterns.

Step 4: Determine the status of similar (partially overlapping) correspondence sets

Some sound changes, particularly conditioned sound changes, can result in a proto-sound being associated with more than one correspondence set. These must be dealt with to achieve an accurate reconstruction. To see how this is done, we will work through an example. For this, let us consider some additional cognate sets in Romance languages, those of Table 5.3 (numbered to follow those of Table 5.1).

TABLE 5.3: Some additional Romance cognate sets

<i>Italian</i>	<i>Spanish</i>	<i>Portuguese</i>	<i>French</i>	<i>(Latin)</i>	<i>English glosses</i>
6. colore /kolore/	color /kolor/	côr /kor/	couleur /kulœr/	colōre	colour
7. correre /korere/	correr /koñer/	correr /korer/	courir /kuri(r)/	currere	to run
8. costare /kostare/	costar /kostar/	costar /kostar/	coûter /kuter/	co(n)stāre ['stand firm']	to cost
9. cura /kura/	cura /kura/	cura /kura/	cure /kyr/	cūra ['care']	cure

Based on the forms of Table 5.3, we set up a sound correspondence for the initial sound in these forms:

Sound correspondence 6:

Italian *k* : Spanish *k* : Portuguese *k* : French *k*

For SOUND CORRESPONDENCE 6, since all the languages have the same sound, *k*, we would naturally reconstruct **k*. However, SOUND CORRESPONDENCE 6 is quite similar to SOUND CORRESPONDENCE 1 (in Table 5.1), for which we also tentatively reconstructed **k*, repeated here for comparison with SOUND CORRESPONDENCE 6:

Sound correspondence 1:

Italian *k* : Spanish *k* : Portuguese *k* : French *f*

The two sets overlap partially, since both sets share some of the same sounds. In fact, the only difference between the two is in French, which has *k* in SOUND CORRESPONDENCE 6 but *f* in SOUND CORRESPONDENCE 1. In cases such as this of similar (partially overlapping) correspondence sets, we must determine whether they reflect two separate proto-sounds or only one which split into more than one sound in one or more of the languages. In the case of SOUND CORRESPONDENCES 1 and 6, we must determine whether both sets reflect **k*, or whether we must reconstruct something distinct for each of the two. Because we assume that sound change is regular, we have only two possibilities. One is to explain why the two sets are different. In this case, that would necessitate showing that while the other languages retained *k*, in French **k* had become *f* in environments which must be specified so as to be able to determine when the postulated single sound, **k*, became *f* and when it remained *k* in French. If we do not succeed in showing this, then we are forced to accept the other possibility, that there were two distinct proto-sounds which resulted in the two correspondence sets, where the two distinct sounds merged to *k* in all contexts in Italian, Spanish and Portuguese, in this example.

In this case, we are able to determine the context in which French sometimes but not always changed **k* to *f*. We notice that in the cognate sets of Table 5.1 which exhibit SOUND CORRESPONDENCE 1, this sound comes before *ε* in French and *a* in the other languages (SOUND CORRESPONDENCE 3), while in SOUND CORRESPONDENCE 6, illustrated by the cognate sets in Table 5.3, the initial sound is not before *a* or *ε* (as in SOUND CORRESPONDENCE 1), but before *o* or *u* (French *u* or *y*). Therefore, we determine that French underwent a conditioned sound change, that **k* > *f* before the vowel of correspondence set 3 (**a* which became *ε* in French), but retained **k* unchanged before the round vowels seen in the cognates of Table 5.3 (essentially **u* and **o*, though we need to go through the steps to reconstruct these). So, in spite of two distinct sound correspondences (1 and 6), we reconstruct a single proto-sound and show that one of these (SOUND CORRESPONDENCE 6) is the result of a conditioned change which affected only some of the instances of original **k* in French (those before original **a*) but not the other cases of **k* (those before **u* and **o*).

In some cases, however, we are forced to reconstruct separate proto-sounds in instances of similar, partially overlapping correspondence sets. Consider for example the two sound correspondences illustrated by the initial sounds in additional cognates in Table 5.4.

Historical Linguistics: An Introduction

TABLE 5.4: Further Romance cognate sets

<i>Italian</i>	<i>Spanish</i>	<i>Portuguese</i>	<i>French</i>	<i>(Latin)</i>	<i>English gloss</i>
10. battere /battere/	batir /batir/	bater /bater/	battre /batr/	battuere	to beat
11. bolla /bolla/	bola /bola/	bola /bola/	boule /bul/	bullā	ball, bubble
12. bontà /bonta/	bondad /bondad/	bondade /bōdaʒi/	bonté /bōte/	bonitāte	goodness
13. bev- /bev-/	beber /beber/	beber /beber/	boire Old French beivre	bibere	to drink
14. venire /venire/	venir /benir/	vir /vir/	venir /vəɳir/	venīre	to come
15. valle /valle/	valle /balje/	vale /vale/	val /val/	valle	valley
16. vestire /vestire/	vestir /bestir/	vestir /vestir/	vêtir /vetir/	vestīre	to dress

Cognate sets 10 to 13 show the sound correspondence in (7):

Sound correspondence 7:

Italian *b* : Spanish *b* : Portuguese *b* : French *b*

Cognate sets 14 to 16 show the sound correspondence in (8):

Sound correspondence 8:

Italian *v* : Spanish *b* : Portuguese *v* : French *v*

Clearly the best reconstruction for SOUND CORRESPONDENCE 7 would be **b*, since all the languages have *b* as their reflex. SOUND CORRESPONDENCE 8 partially overlaps with this in that Spanish has *b* for its reflex in this set as well, corresponding to *v* of the other languages. As in the case of Proto-Romance **k* (above), either we must be able to explain the difference in these two sets by showing that those languages with *v* changed an original **b* to *v* under some clearly defined circumstances, or we must reconstruct two separate sounds in the proto-language, presumably **b* and **v*, where Spanish would then be assumed to have merged its original *v* with *b*. In this case, to make a long story short, if we look for factors which could be the basis of a conditioned change in Italian, Portuguese and French, which could explain how a single original **b* could become *v* in certain circumstances but remain *b* in others in these languages, we are unable to find any. We find both *b* and *v* at

the beginnings of words before all sorts of vowels, and with more extensive data we would find that both sounds occur quite freely in the same environments in these languages. Since no conditioning factor can be found, we reconstruct **b* for the cognates in correspondence set 7 and **v* for those in correspondence set 8, two distinct proto-sounds. From this, it follows that **v* merged with **b* in Spanish, accounting for why *b* is the Spanish reflex in both cognate sets 14–16 and 10–13 of Table 5.4.

A somewhat more revealing example of the problem of overlapping correspondence sets which prove to contrast and thus require separate sounds to be reconstructed is seen in the example in Table 5.5, from Mayan languages (of which only a few, each representing a major branch of the family, are represented).

TABLE 5.5: Some Mayan cognate sets

	<i>K'iche'</i>	<i>Tzeltal</i>	<i>Yucatec</i>	<i>Huastec</i>	<i>Proto-Mayan</i>	
1.	ra:h	ja	jah	jah-	*ra:h	'hot, spicy'
2.	riʔx	jix	jiʔih	jeh-	*riʔix	'old (man)'
3.	r-	j-	j-	—	*r-	'his/her/its'
4.	raʃ	jaʃ	jaʔaʃ	yaʃ-	*raʔʃ	'green'
5.	war	waj	waj	waj	*war	'to sleep'
6.	ja:x	jah	jah	jaʔ	*ja:h	'sick'
7.	jaʃ	jaʃ	—	—	*jaʃ	'crab, pincers'
8.	k'aj-	k'aj-	k'aj-	č'aj-	*k'aj-	'to sell'
		['sing']	['sing, sell']	['buy']		

Note that the 'dash' (—) is the convention used by linguists to mean that either no cognate is known or the data are unavailable. In such instances, we must rely on information from the other cognate sets in order to determine features of those languages where the forms are missing.

Cognate sets 1–5 show SOUND CORRESPONDENCE 1:

Sound correspondence 1:

K'iche' *r* : *Tzeltal* *j* : *Yucatec* *j* : *Huastec* *j*

Cognate sets 6–8 show SOUND CORRESPONDENCE 2:

Sound correspondence 2:

K'iche' *j* : *Tzeltal* *j* : *Yucatec* *j* : *Huastec* *j*

Clearly, by our standard criteria, the best Proto-Mayan reconstruction for SOUND CORRESPONDENCE 2 would be **j* (preserved unchanged in

all the languages). However, all the languages except K'iche' also have *j* as their reflex in SOUND CORRESPONDENCE 1, whereas K'iche' has *r* in this case. As in the discussion of the Proto-Romance **k* case (above), we must either explain how the difference in these two sets arose by showing that K'iche' had changed original **j* to *r* in some clear set of phonetic circumstances, or we must reconstruct two separate sounds in the proto-language. In this case, to make a long story short, if we look for factors which could be the basis of a conditioned change in K'iche', we are unable to find any. We find both *r* and *j* at the beginning and end of words, before all sorts of vowels, and so on, and basically either sound can occur in any context without restrictions. Since no conditioning factor can be found, we reconstruct **r* for the SOUND CORRESPONDENCE 1 and **j* for SOUND CORRESPONDENCE 2, two distinct proto-sounds. From this, it follows that **r* merged with *j* in Tzeltal, Yucatec and Huastec, accounting for why they have *j* as the reflex also in cognate sets 6–8 of Table 5.5. When we look at still other Mayan languages, we find this distinction further supported, since, for example, Mam has *t* and Motocintlec has *č* where K'iche' has *r* in the cognates that illustrate SOUND CORRESPONDENCE 1, but they both have *j* in cognates where K'iche' has *j* in SOUND CORRESPONDENCE 2. That is, K'iche' turns out not to be the only witness of the distinction between the two sounds of these correspondence sets (Campbell 1977).

There is a famous case which confirms this way of treating partially overlapping sound correspondence sets. Leonard Bloomfield's (1925, 1928) famous proof of the applicability of the comparative method in unwritten ('exotic') languages was based on the correspondence sets from Central Algonquian languages presented with his reconstructions in Table 5.6 (PCA = Proto-Central Algonquian). Bloomfield (1925) postulated the reconstruction of **çk* for set 5 as distinct from the others on the basis of scant evidence, but under the assumption that sound change is regular and the difference in this correspondence set (though exhibiting only sounds that occur in different combinations in the other sets) could not plausibly be explained away. Later, his decision to reconstruct something different for set 5 was confirmed when Swampy Cree was discovered, which contained the correspondence *hɪk* in the morpheme upon which set 5 was based, distinct in Swampy Cree from the reflexes of the other four reconstructions. Based on this discovery, Bloomfield (1928: 100) concluded:

As an assumption, however, the postulate [of sound-change without exception] yields, as a matter of mere routine, predictions which otherwise would be impossible. In other words, the statement that

The Comparative Method and Linguistic Reconstruction

phonemes change (sound-changes have no exceptions) is a tested hypothesis: in so far as one may speak of such a thing, it is a proved truth.

TABLE 5.6: Central Algonquian sound correspondences and Bloomfield's reconstruction

	<i>Fox</i>	<i>Ojibwa</i>	<i>Plains Cree</i>	<i>Menomini</i>	<i>PCA</i>
1.	hk	sk	sk	čk	*čk
2.	fk	fk	sk	sk	*fk
3.	hk	hk	sk	hk	*xk
4.	hk	hk	hk	hk	*hk
5.	fk	fk	hk	hk	*çk

Mayan languages provide a somewhat clearer and more compelling case of the need to reconstruct distinct proto-sounds if the difference between two partially overlapping correspondence sets cannot be explained away. Consider the following two K'ichean (a subgroup of Mayan) sound correspondences:

	<i>K'iche'</i>	<i>Tz'utujil</i>	<i>Kaqchikel</i>	<i>Poqomchi'</i>	<i>Uspanteko</i>	<i>Q'eqchi'</i>
(1)	x	x	x	x	x	x
(2)	x	x	x	x	x-/-($\check{V}$)x	h

In (1), all the languages have *x* as the reflex, and we would naturally expect to reconstruct **x* for the Proto-K'ichean sound. However, (2) overlaps considerably with (1), where each language also has *x* except Q'eqchi', which has *h*; Uspanteko has *x* too; however, if there is a vowel preceding this *x*, it has falling tone ($\check{V}$), which is not the case for vowels preceding the *x* of correspondence set (1). Since no conditioning factor can be found to explain away the difference between the two sets in Q'eqchi' and Uspanteko, separate proto-sounds must be reconstructed. It has been proposed that correspondence set (2) represents a sound which is further forward than *x*, the sound of correspondence set (1), and thus * $\check{x}$ (a somewhat fronted velar fricative) has been proposed to represent correspondence set (2). While the reconstruction with **x* and * $\check{x}$ for these two sets is not phonetically ideal, nevertheless the decision to reconstruct something different for the two is confirmed when cognates are compared from other branches of Mayan beyond K'ichean, as in the following:

	<i>Yucatec</i>	<i>Chol</i>	<i>Chuj</i>	<i>Q'anjobal</i>	<i>Motocintlec</i>	<i>Mam</i>	<i>K'ichean</i>
(3)	x	h	x	x	x	x	*x
(4)	n	n	ŋ	ŋ	ŋ	x	* $\check{x}$

That is, the sounds of correspondence set (3) reflect Proto-Mayan **x*, whereas those of set (4) reflect Proto-Mayan **ŋ*. Since the two sounds are clearly distinguished in the other branches of the family and descend from distinct sounds in Proto-Mayan, the validity of the decision to reconstruct different sounds for Proto-K'ichean, one branch of Mayan, is confirmed. (Perhaps also the phonetics of this reconstruction could be refined. Since the *x* of K'ichean (and several other Mayan) languages is phonetically [X] (voiceless uvular fricative), it may seem appealing to reconstruct **χ* for set (3) in K'ichean and then let **x* (velar) represent set (4). Since K'ichean languages contrast uvular and velar stops, a similar contrast in the fricative series may make some sense (see step 5).)

Step 5: Check the plausibility of the reconstructed sound from the perspective of the overall phonological inventory of the proto-language

Steps 5 and 6 are related. The rule of thumb in step 5 takes advantage of the fact that languages tend to be well behaved, that is, they tend to have symmetrical sound systems with congruent patterns. For example, in the reconstruction of sounds for the individual sound correspondences in step 3, we can reconstruct each sound of the proto-language with little regard for how these sounds may relate to one another or how they may fit together to form a coherent system. Often in step 5 when we consider the broader view of these sounds in the context of the overall inventory, we refine and correct our earlier proposals. For example, if two related languages have the correspondence set Language₁ *d* : Language₂ *r*, we might initially reconstruct **r* and assume **r* > *d* in Language₁, since *r* > *d* is known to take place in languages, though the alternative of **d* with the assumption that Language₂ underwent the change **d* > *r* is just as plausible, since the change *d* > *r* is also found in languages. Suppose, however, that in step 5 we discover that we have reconstructed sounds based on other sound correspondences which would give the following phonological inventory for the proto-language:

<i>*p</i>	<i>*t</i>	<i>*k</i>
<i>*b</i>		<i>*g</i>
	<i>*r</i>	
	<i>*l</i>	

There is a gap in this inventory where **d* would be expected to complete the stop series, where the voiceless stops (**p*, **t*, **k*) would each be matched by a voiced counterpart (**b*, **d*, **g*), if a **d* existed, which

would make the stop series symmetrical, the pattern congruent. The proto-language as tentatively reconstructed so far, with both **r* and **l* and **b* and **g*, but no **d*, would be unusual and unexpected. However, by revising our earlier tentative reconstruction of **r* for the *d : r* sound correspondence to the equally plausible **d* (assuming **d > r* in Language₂), we arrive at a much more coherent and likely set of sounds for the proto-inventory, where the two stop series are congruent:

<i>*p</i>	<i>*t</i>	<i>*k</i>
<i>*b</i>	<i>*d</i>	<i>*g</i>
	<i>*l</i>	

While this instance is presented as a hypothetical possibility, it is in fact encountered in a number of real language families, for example in branches of Austronesian. It is important, however, to keep in mind that while languages tend to be symmetrical and have pattern congruity, this is by no means always the case.

Let's consider one other hypothetical instance, also actually found in real language families. If in a family of two languages we encounter the correspondence set Language₁ *s* : Language₂ *ʃ*, either we could reconstruct **s* (assuming **s > ʃ* in Language₂) or we could postulate **ʃ* (and assume **ʃ > s* in Language₁). Both of these changes (**s > ʃ* and **ʃ > s*) are frequently found in other languages. Suppose, however, that in step 5 we discover that the other sound correspondences justify the reconstruction of several proto-sounds in the alveolar series, including **ts*, but no other palato-alveolar sound. This would give a proto-language with alveolar **ts* but palato-alveolar **ʃ* and no **s*, but this system would be asymmetrical and odd. However, a proto-language with **ts* and **s* but lacking **ʃ* would be normal and not at all unusual. Therefore, in step 5 we would revise the preliminary reconstruction of Step 3 to make sure that we reconstructed **s* for the *s : ʃ* correspondence set (assuming **s > ʃ* in Language₂) to ensure a more plausible overall phonological inventory for the proto-language which we reconstruct. A real example which fits precisely this situation comes from Mixe-Zoquean (a family of languages from southern Mexico), where the languages of the Zoquean branch have *s* corresponding to *ʃ* of the Mixean languages, and neither has *č*, only *ts*. So, for Proto-Mixe-Zoquean, **s* is a better reconstruction for the *s : ʃ* correspondence set.

Of course, languages do not have to be symmetrical or fully natural, though they tend to be. Also, it is conceivable that a proto-language might have gaps (such as the missing **d* in the first example) and asymmetries (**ts* and **ʃ* rather than **ts* and **s* in the second example);

however, unless there is strong evidence to compel us to accept a less expected reconstruction, we are obliged to accept the ones motivated by pattern congruity, symmetry and naturalness. That is, languages in general have symmetrical (natural) systems much more often than not. Therefore, in the case of two possibilities, one with a more expected inventory and the other with a less expected, less normal inventory, the probability that the reconstruction with the symmetrical, natural system accurately reflects the structure of the formerly spoken proto-language is much higher than that the asymmetrical one does. Given the greater odds of the first being right, we choose it, not the second, which is less likely to have existed.

Step 6: Check the plausibility of the reconstructed sound from the perspective of linguistic universals and typological expectations

Certain inventories of sounds are found with frequency among the world's languages while some are not found at all and others only very rarely. When we check our postulated reconstructions for the sounds of a proto-language, we must make sure that we are not proposing a set of sounds which is never or only very rarely found in human languages. For example, we do not find any languages which have no vowels whatsoever. Therefore, a proposed reconstructed language lacking vowels would be ruled out by step 6. There are no languages with only glottalised consonants and no plain counterparts, and therefore a reconstruction which claimed that some proto-language had only glottalised consonants and no non-glottalised counterparts would be false. Languages do not have only nasalised vowels with no non-nasalised vowels, and so we never propose a reconstruction which would result in a proto-language in which there are only nasalised vowels.

Let us look at an actual case. The Nootkan family has the sound correspondences seen in Table 5.7. Since no other guidelines help here, we

TABLE 5.7: Nootkan correspondences involving nasals

	<i>Makah</i>	<i>Nitinat</i>	<i>Nootka</i>
1.	b	b	m
2.	d	d	n
3.	b'	b'	m̥
4.	d'	d'	n̥

might be tempted, based on the majority-wins principle, to reconstruct voiced stops for Proto-Nootkan for these four correspondence sets and postulate that these changed to the nasal counterparts in Nootka. However, only a very few languages of the world lack nasal consonants; therefore, we do not expect a nasalless proto-language, and any postulated proto-language which lacks nasals altogether must be supported by very compelling evidence. In this case, Nitinat and Makah belong to the area of the Northwest Coast of North America where languages of several different families lack nasal consonants. The lack of nasals in these languages is due to the influence of other nasalless languages in the linguistic area (see Chapter 12); Proto-Nootkan had nasals, as Nootka still does, but Makah and Nitinat lost nasality – their former nasals became corresponding voiced oral stops ($*m > b$, $*n > d$, $*\dot{m} > b'$, $*\dot{n} > d'$). The knowledge of universals and typological expectations in this case would direct us to reconstruct the proto-language with nasals and to assume a subsequent change in Makah and Nitinat.

Of course, in step 5, we also relied on general typological patterns in language and evaluated proposed proto-inventories on this basis; that is, steps 5 and 6 are not really distinct.

Step 7: Reconstruct individual morphemes

When we have reconstructed the proto-sound from which we assume that the sounds in the sound correspondences descend, it is possible to reconstruct lexical items and grammatical morphemes. For example, from the cognate set for 'goat' in Table 5.1, the first sound (in SOUND CORRESPONDENCE 1) was reconstructed as $*k$ (based on the $k : k : k : \int$ correspondence set); for the second sound in the cognates for 'goat', we reconstructed $*a$, as in SOUND CORRESPONDENCE 3 (with $a : a : a : \epsilon$); the third sound is represented by SOUND CORRESPONDENCE 2 ($p : b : b : v$), for which we reconstructed $*p$; the next sound in cognate set 1, as represented by SOUND CORRESPONDENCE 4, reflects Proto-Romance $*r$ (based on the $r : r : r : r$ correspondence set); and the last sound in the 'goat' cognates reflects SOUND CORRESPONDENCE 2 (or actually a modification of it involving final vowels in French) which was reconstructed as $*a$. Putting these reconstructed sounds together following the order in which they appear in the cognates for 'goat' in set 1, we arrive at $*kapra$. That is, we have reconstructed a word in Proto-Romance, $*kapra$ 'goat'. For cognate set 2 'dear' in Table 5.1, we would put together $*k$ (SOUND CORRESPONDENCE 1), $*a$ (SOUND CORRESPONDENCE 3), $*r$ (SOUND CORRESPONDENCE 4) – all seen already in the

reconstruction of 'goat' – and **o* (SOUND CORRESPONDENCE 5, with *o* : *o* : *u* : $\emptyset$), giving us the Proto-Romance word **karo* 'dear'. For cognate set 3 'head', we have combinations of the same correspondence sets already seen in the reconstructions for 'goat' and 'dear', SOUND CORRESPONDENCES 1, 3, 2 and 5, giving the Proto-Romance reconstructed word **kapo* 'head'. In this way, we can continue reconstructing Proto-Romance words for all the cognate sets based on the sequence of sound correspondences that they reflect, building a Proto-Romance lexicon.

The reconstruction of a sound, a word or large portions of a proto-language is, in effect, a hypothesis (or better said, a set of interconnected hypotheses) concerning what those aspects of the proto-language must have been like. Aspects of the hypothesised reconstruction can be tested and proven wrong, or can be modified, based on new insights. These insights may involve new interpretations of the data already on hand, or new information that may come to light. The discovery of a heretofore unknown member of the family may provide new evidence, a different testimony of the historical events which transpired between the proto-language and its descendants, which could change how we view the structure and content of the proto-language. There are a number of well-known cases where this has happened which illustrate this point. Bloomfield's Swampy Cree case has already been mentioned. With the discovery and decipherment of Hittite (or better said, the languages of the Anatolian branch of Indo-European), the whole picture of Proto-Indo-European phonology changed; this included clearer evidence of several new proto-sounds (the laryngeals).

5.3 A Case Study

Let us apply the comparative method in a somewhat more complex example (though still simplified) which illustrates what we have until now been considering mainly through a very simplified comparison of Romance languages. The forms in Table 5.8 are cognates between Finnish and Hungarian. These two languages belong to the Finno-Ugric family, but since there are many other languages also in this family, this example is far from complete enough to offer a full perspective on the proto-language – the two are compared here only for illustration's sake. Finnish and Hungarian separated from one another a very long time ago, which explains why some of these cognates are not as immediately apparent based on mere superficial similarity. The two languages have undergone many changes and are now quite different, and we would need much more information than presented here to reconstruct all the sounds of Finno-Ugric. Therefore, here we will be concerned only with

The Comparative Method and Linguistic Reconstruction

the initial sounds in Sets I–IV and with the medial consonants of Sets V and VI.

TABLE 5.8: Some Finnish–Hungarian cognate sets

	<i>Finnish</i>	<i>Hungarian</i>	
Set I:	1. puu	fɔ	tree
	2. pitæ-	fy:	keep
	3. poika	fiu:	boy
	4. pesæ	fø:	nest
	5. puhu- speak, blow	fu:(j)-	blow
	6. purki	forr	snow flurry
Set II:	7. tuo-	toj	take
	8. tutka-	tø:(l)dʃ	tip, point
	9. tunte-	tud	know
	10. tyvi	tø:	base
	11. talvi	te:l	winter
Set III:	12. kota	ha:z	house, hut
	13. kuole-	hɔl	die
	14. kamara	ha:mlik	skin
	15. kala	hɔl	fish
	16. koi	hɔj-	dawn
	17. kolme	ha:rom	three
	18. kalin	ha:lo:	net
	19. kusi	hu:dʃ	urinate
Set IV:	20. kivi	kø:	stone
	21. keri	ke:reg	bark
	22. kyynel	kønnj	tear (noun)
	23. kæte-	ke:z	hand
	24. kii- rut, mating	ke:j	(carnal) pleasure
Set V:	25. pato dam, wall	fɔl	wall
	26. ete-	el	before
	27. piti-	fel	long
	28. tæytæ-	tel	fill
	29. løyætæ-	lel	find
Set VI:	30. kuole-	hɔl	die
	31. nuoli	nji:l	arrow
	32. kala	hɔl	fish
	33. liemi	leve-	broth
	34. lintu bird	lu:d	goose

Step 1 is already done; the cognates have been assembled in Table 5.8. In step 2, we compare these cognates and set up sound correspondences. It is helpful to keep a good record of what we have looked at, either by noting with each sound correspondence the numbers which identify the cognate sets in which it is found, or if we do not use numbers, then the glosses. This is just a matter of bookkeeping – a means of being able to go back and check things without having to search back through all the data to find the cognates which exhibit the correspondence in question, particularly useful, for example, in steps 5 and 6.

Sound correspondences found in the cognates of Table 5.8 are:

- (1) Finnish *p*- : Hungarian *f*- (in Set I, nos 1–6)
- (2) Finnish *t*- : Hungarian *t*- (in Set II, nos 7–11)
- (3) Finnish *k*- : Hungarian *h*- (in Set III, nos 12–19)
- (4) Finnish *k*- : Hungarian *k*- (in Set IV, nos 20–24)
- (5) Finnish *-t*- : Hungarian *-l*- (in Set V, nos 25–29)
- (6) Finnish *-l*- : Hungarian *-l*- (in Set VI, nos 30–34)

In step 3, we attempt to reconstruct the proto-sounds which we believe are reflected by each of these correspondence sets. For SOUND CORRESPONDENCE (1) (*p* : *f*) our choices are: [1] reconstruct **p* and assume that Hungarian has changed to *f*; [2] reconstruct **f* and assume that Finnish has changed this to *p*; or [3] reconstruct some third thing (say **p^h*) and assume that both changed, that Hungarian changed in one way to give *f* and Finnish in another to give *p*. In looking at directionality of change as a guideline, we conclude that possibilities [1] (**p*) and [3] (some third thing, like **p^h*) are plausible, but not [2] (**f*), since in sound changes familiar from languages around the world we see that voiceless bilabial stops (*p*, *p^h*) frequently become *f*, but extremely rarely do we find instances of *f* changing to *p* or *p^h*. Since in this comparison only two languages are involved, we will not be able to make use of the majority-wins principle to help us in reconstruction. In the guideline of factoring in features held in common, we may conclude from *p* and *f* that the proto-sound was voiceless and a labial of some kind, but this is consistent with all three of the possibilities [1]–[3]. In this case, then, factoring in the common features provides no basis for choosing among the alternatives. Steps 4 and 5 will help us resolve which of these possibilities is the best reconstruction, which for now we will take to be [1], with **p*, based on directionality of change and on economy. Economy urges us to postulate only one change, **p* > *f* in Hungarian, whereas **p^h* would require the postulation of two changes, **p^h* > *p* in Finnish and **p^h* > *f* in Hungarian.

SOUND CORRESPONDENCE (2) (*t- : t-*) appears to reflect **t-* (where neither language changed).

SOUND CORRESPONDENCES (3) (*k- : h-*) and (4) (*k- : k-*) may present a challenge.

In (4) we reconstruct **k-*, since neither language changed. However, (3) would also seem to be best reconstructed as **k-* based on directionality of change, since the change *k > h* is very common and not unexpected, whereas a change *h- > k-* is all but unknown. We move to step 4 to attempt to resolve the difficulty of the partially overlapping SOUND CORRESPONDENCES (3) and (4). This means that if we can show that both reflect the same original sound because one of the languages has undergone a conditioned change where that sound changed in some environments but not others, then we reconstruct only a single sound, the same for both sets, explaining the difference between them by writing out the conditions under which the one language changed so that it has two different outcomes from the single original sound. If we cannot explain the difference in this way, then we are obliged to reconstruct two distinct proto-sounds, one to represent each of the two sound correspondences, with the assumption that the two merged to *k* in Finnish. This, then, requires us to take a closer look at the cognate sets in question (those of Sets III and IV). We notice that in the cognates of Set III Hungarian has *h-* which appears only before back vowels (*u, o, a*), whereas in the cognates of Set IV Hungarian has *k* and it occurs only before front vowels. We conclude that Hungarian had a single original sound which changed to *h* before back vowels (as in Set III) and remained *k* before front vowels (as in Set IV); we reconstruct **k*. We might wonder whether the proto-language might not have had **h* which then changed to *k* before front vowels in Hungarian and to *k* in all environments in Finnish. First, directionality argues against this possibility (since the change *h > k* is essentially unknown anywhere). Second, the criterion of economy also goes against this alternative; it is more plausible to assume that only one change took place, **k > h* before back vowels in Hungarian, than to need to suppose that two independent changes occurred, one of **h > k* before front vowels in Hungarian and another independent one of **h > k* in all contexts in Finnish.

The medial sounds in SOUND CORRESPONDENCES (5) and (6) present a similar problem. Since Hungarian has *-l-* in both these while Finnish has *-t-* in (5) but *-l-* in (6), in step 4 we must determine whether it is necessary to reconstruct two distinct sounds or whether these two can be put together as different outcomes from the same original sound due

to some conditioned sound change in Finnish which resulted in the difference. To make the long story shorter, which would be clearer if more cognate sets were presented, we search in vain for any conditioning factor by which we might assume that an original **-l-* became *-t-* in Finnish in some environments but remained *-l-* in others. Both *t* and *l* occur in all positions (initial, medial, final) and both before and after all vowels in the Finnish cognates. Therefore, we have no choice but to reconstruct two distinct sounds, and we choose **t* for (5) and **l* for (6). This requires us to assume that medial **-t-* and **-l-* merged to *-l-* in Hungarian.

Let us return to SOUND CORRESPONDENCE (1) (*p-* : *f-*) and apply steps 5 and 6. For this, let us assume that we have available in Table 5.8 all the evidence for possible stops in Finnish–Hungarian comparisons. Our tentative reconstructions based on the sound correspondences to this point give us:

- *p* (1) Finnish *p-* : Hungarian *f-* (in Set I, nos 1–6)
- *t* (2) Finnish *t-* : Hungarian *t-* (in Set II, nos 7–11)
- *-t-* (5) Finnish *-t-* : Hungarian *-l-* (in Set V, nos 25–29)
- *k* (before back vowels) (3) Finnish *k-* : Hungarian *h-* (in Set III, nos 12–19)
- *k* (before front vowels) (4) Finnish *k-* : Hungarian *k-* (in Set IV, nos 20–24)
- *l* (6) Finnish *-l-* : Hungarian *-l-* (in Set VI, nos 30–34)

We check these in step 5 to see how plausible the resulting phonemic inventory (sound system) would be if we keep these sounds. A language with the stops *p*, *t*, *k* would be quite normal. If we did attempt to reconstruct possibility [3] (some third thing from which to derive *p* and *f* naturally and plausibly, say **p^h*) for correspondence set (1), we would no longer have a natural, symmetrical phonemic inventory (**p*, **t*, **k*), but rather the unlikely **p^h*, **t*, **k*. In step 5, we would see that this would result in a series of stops which is not internally consistent, where the presence of aspirated *p^h* (with no plain *p*) is incongruent with *t* and *k*. In step 6, we would check this pattern to see how well it fits typologically with what we know of the sound systems of the world's languages. Here we would find that languages with only the stops *p^h*, *t*, *k* are very rare, while a large majority of languages have a stop series with *p*, *t*, *k*. For possibility [2] (which would reconstruct **f*), step 5 tells us that a language with *f*, *t*, *k* (but no *p*) is also internally not as consistent as one with *p*, *t*, *k*, and therefore not as good a reconstruction. Step 6 tells us the same thing; in looking at the sound systems of the world's languages, we find very few with *f*, *t*, *k* (and no *p*), but hundreds with *p*,

t, *k*. Putting all these considerations together, directionality, economy, internal consistency and typological realism, we conclude that the reconstruction of **p* is the best of the alternatives for SOUND CORRESPONDENCE (1). In turn, we would apply steps 5 and 6 to the other reconstructions, **t* and **k*; we would find these to be supported. We would find that the possible alternative with **h* for SOUND CORRESPONDENCES (3) and (4) which could have been considered would be inconsistent internally and typologically, not to mention being against economy and the known directionality of change.

5.4 Indo-European and the Regularity of Sound Change

The development of historical linguistics is closely associated with the study of Indo-European. *Grimm's Law*, *Grassmann's Law* and *Verner's Law* are major milestones in the history of Indo-European and thus also in historical linguistics, and traditionally all linguists have had to learn these laws – indeed, knowledge of them is helpful (some might say essential) for understanding the comparative method and the regularity hypothesis. (These laws have been considered in preliminary form in Chapter 2.) In this section, each is taken up individually and the development of the claim that sound change is regular based on these laws is considered.

5.4.1 Grimm's Law

The forms of Table 5.9 illustrate Grimm's Law, a series of changes in the stops from Proto-Indo-European to Proto-Germanic:

- voiceless stops (*p*, *t*, *k*) > voiceless fricatives (*f*, *θ*, *h*(*x*))
- voiced stops (*b*, *d*, *g*) > voiceless stops (*p*, *t*, *k*)
- voiced aspirated stops (*bh*, *dh*, *gh*) > voiced plain stops (*b*, *d*, *g*).

(Not all the stops are included in Table 5.9.) In Table 5.9, the Gothic and English forms show the results of these changes in Germanic, while the Sanskrit, Greek and Latin forms for the most part reflect the Indo-European stops unchanged; that is, they did not undergo Grimm's Law as the Germanic forms did.

TABLE 5.9: Indo-European cognates reflecting Grimm's Law

<i>Sanskrit</i>	<i>Greek</i>	<i>Latin</i>	<i>Gothic</i>	<i>English</i>
<i>Set Ia: *p > f</i>				
pad-	pod-	ped-	fōtus	foot

Historical Linguistics: An Introduction

<i>Sanskrit</i>	<i>Greek</i>	<i>Latin</i>	<i>Gothic</i>	<i>English</i>
pán̐ça [pán̐ça]	pénte	[quinque] [k ^w ink ^w e]	fimf	five
pra-	pro-	pro-	fra-	fro
pū- 'make clear, bright'	pur	pūrus 'pure'	[OE fȳr]	fire
pitár-	patēr	pater	fadar [faðar]	father [OE fæder]
nápāt- 'descendant'		nepōs 'nephew, grandson'	[OHG nefo]	nephew [OE nefa]

Set Ib: *t > θ

trī-/tráyas	treīs/tría	trēs	þrija	three
tv-am	tū (Doric)	tv-am	þu	thou
-ti- gátis 'gait'	-ti- mor-tis 'death'	-tis/-sis básis 'going'		-th 'nominaliser' health, truth, birth, death

Set Ic: *k > h (or [x])

śván- [ʃvən-]	kúōn	canis [kanis]	hunds	hound 'dog'
śatám [ʃətám]	(he-)katón	centum [kentum]	hunda (pl.)	hundred
kravís 'raw flesh'	kré(w)as 'flesh, meat'	cruor 'raw, blood, thick'		raw [OE hrāw] 'corpse'
dás̥a [dás̥ə]	déka	decem [dekem]	taíhun [tæxun]	ten

*Set IIa: *b > p* (*b was very rare in Proto-Indo-European, and many doubt that it was part of the sound system; some Lithuanian forms are given in the absence of cognates in the other languages)

The Comparative Method and Linguistic Reconstruction

<i>Sanskrit</i>	<i>Greek</i>	<i>Latin</i>	<i>Gothic</i>	<i>English</i>
		(<i>Lithuanian</i>) dubùs	diups	deep [OE dēop]
		(<i>Lithuanian</i>) kánnapēs]		hemp (borrowing?)
	kánnabis	<i>Latin</i> lūbricus	sliupan	slip

*Set IIb: *d > t*

d(u)vā-	dúo/dúō	duo	twái [twē]	two
dánt-	odónt-	dent-	tunþus	tooth
dáśa [dásə]	déka	decem [dekem]	taíhun [texun]	ten
pad-	pod-	ped-	fōtus	foot
ad- 'eat'	édō 'I eat'	edō 'I eat'		eat [OE etan]
véda 'I know'	woída 'I know'	videō 'I know'	wáit [wēt] 'I know'	wit 'to know'

*Set IIb: *g > k*

jánás	génos	genus	kun-i 'race, tribe'	kin
jánu-	gónu	genū	kniu	knee
jñātá	gnōtós	(g)nōtos	kunnan 'to know'	known
ājra- 'country'	agrós	ager	akrs	acre 'field'
mṛj- 'to milk'	(a-)mélgō 'to squeeze out'	mulgeō 'I milk'	miluk-s 'milk'	milk

Historical Linguistics: An Introduction

<i>Sanskrit</i>	<i>Greek</i>	<i>Latin</i>	<i>Gothic</i>	<i>English</i>
<i>Set IIIa: *bh > b</i>				
bhar-	phér-	fer-	baír-an [beran] 'to bear'	bear
bhrátar	phrātēr	frāter	brōpar	brother
a-bhū-t 'he was'	é-phu 'I brought forth'	fu-it 'he was'	bau-an [bō-an] 'to dwell'	be
<i>Set IIIb: *dh > d</i>				
dhā- 'put'	ti-thē-mi 'I put'	fē-cī 'I made'		do [OE dō-n]
dhṛaṣṇóti 'he dares'	thrasús 'bold'	(fest-)	(ga-)dars 'he dares'	dare [OE dear(r)] 'he dares'
dvār-	thūr-a	for-ēs	daúr- [dor-]	door
vidhāvā	ē-wíthewos 'unmarried youth'	vidua	widuwo	widow
mádhū	méthū			mead
madhya-	mésos	medius	midjis	mid
<i>Set IIIc: *gh > g</i>				
harṇs-á- 'swan, goose'	khēn	āns-er	Gans [<i>German</i>]	goose
stigh- 'stride'	steíkhō 'I pace'		steigan [stīgan] 'to climb'	
vah- 'carry'	wókh-os 'chariot'	veh-ō 'I carry'	ga-wig-an 'to move, shake'	weigh/wain

Grimm's Law embodies systematic correspondences between Germanic and non-Germanic languages, the results of regular sound

changes in Germanic. So, for example, as a result of the change $*p > f$ in the examples in Set Ia of Table 5.9, Gothic and English (the Germanic languages) have the reflex f corresponding to p in Sanskrit, Greek and Latin (the non-Germanic languages), all from Proto-Indo-European $*p$. While Grimm's Law accounts for the systematic correspondences seen in Table 5.9, nevertheless these are not entirely without exceptions. However, as we will see, these exceptions all have satisfactory explanations. One set of forms which seem to be exceptions to Grimm's Law involves stops in consonant clusters, and examples of these are given in Table 5.10. (An Old High German (OHG) form is sometimes substituted when no Gothic cognate is available; OE = Old English.)

TABLE 5.10: Exceptions to Grimm's Law in consonant clusters

<i>Sanskrit</i>	<i>Greek</i>	<i>Latin</i>	<i>Gothic</i>	<i>English</i>
1. páś-	[skep-]	spec-	[OHG speh-]	spy (?) 'to see'
2. ṣṭhiv-)	pū	spu-	speiw-an [spīw-an]	spew 'to spit'
3. aṣṭáu [əṣṭāu]	oktō	octō [oktō]	ahtáu [axtau]	eight
4. nákt-	nukt-	noct- [nokt-]	nahts [naxts]	night
5.		capt(īvus)	(haft)	[OE hæft] 'prisoner'
6. -ti- gátis 'gait'	-ti- mor-tis 'death'	-tis/-sis básis 'going'		-t 'nominaliser' thrift, draught, thirst, flight, drift
7.		piscis [piskis]	fisks	[OE fisc] 'fish'

In these forms, by Grimm's Law, corresponding to the p in (1) and (2) of Sanskrit, Greek and Latin we should expect to find f in Gothic and English, not the p seen in these forms. (And given the p of Gothic and English, the Germanic languages, we expect the correspondence in Sanskrit, Greek and Latin to be b , not the p that actually occurs.) In (3–6) we expect Gothic and English to have /θ/ (not the actually occurring t) corresponding to the t of Sanskrit, Greek and Latin. And in (7), we would expect Latin k to correspond to Germanic x , not to the k of the Gothic and English words in this cognate set. These exceptions are

explained by the fact that Grimm's Law was actually a conditioned change; it did not take place after fricatives (**sp* > *sp*, not **sf*) or after stops (**kt* > *xt*, not **xθ*; the **k*, the first member of the cluster, does change to *x* as expected by Grimm's Law, but the **t*, the second member, does not change). In the case of (6), the difference between *thrift*, *draught*, *thirst*, *flight*, *drift* of Table 5.10 and the *health*, *truth*, *birth*, *death* of Table 5.9 is explained in the same way. The /θ/ forms (as in Table 5.10) underwent Grimm's Law (**t* > θ); the forms with -*t* (in Table 5.9) are exempt from Grimm's Law because this **t* comes after a fricative in English (the <gh> of *draught* and *fight* was formerly [x], which was later lost; see Chapter 14). Thus, when Grimm's Law is correctly formulated – written to exclude stops after fricatives and other stops in consonant clusters, since that environment did not enter the change – the stops in clusters are not, in fact, exceptions to the sound change.

5.4.2 Grassmann's Law

Another set of forms which earlier had seemed to be exceptions to Grimm's Law is explained by Grassmann's Law (seen already in Chapter 2). In Greek and Sanskrit, Grassmann's Law regularly dissimilated the first of two aspirated stops within a word so that the first lost its aspiration, as in the change from Proto-Indo-European **dhi-dhē-mi* 'I put, place' (with reduplication of root *dhē-*) to Sanskrit *da-dhā-mi* and Greek *ti-thē-mi*. As a result of Grassmann's Law, some sound correspondences between Sanskrit, Greek and Germanic languages do not match the expectations from Grimm's Law, as, for example, in the following cognates:

Sanskrit	Greek	Gothic	English
bōdha	peutha	biudan	bid 'to wake, become aware'
bandha		bindan	bind 'to bind'.

The first is from Proto-Indo-European **bheudha-*, the second from **bhendh-*; both have undergone dissimilation of the first **bh* due to the presence of a second aspirated stop in the word (**dh* in this case). This gives the SOUND CORRESPONDENCE in (1):

- (1) Sanskrit *b* : Greek *p* : Gothic *b* : English *b*.

By Grimm's Law, we expect the *b* of Sanskrit to correspond to *p* in Germanic (Gothic and English in this case), and we expect Germanic *b* to correspond to Sanskrit *bh* and Greek *ph*. So SOUND CORRESPONDENCE

(1) in these cognate sets appears to be an exception to Grimm's Law. The cognate sets with correspondence (1) (and others for the originally aspirated stops at other points of articulation), then, are not real exceptions to Grimm's Law; rather, their reflexes in Germanic are correct for Grimm's Law, and the Sanskrit and Greek reflexes are not those expected by Grimm's Law only because Grassmann's Law regularly deaspirated the first aspirated stop when it occurred before another aspirated stop in the word in these languages. That is, SOUND CORRESPONDENCE (1) (and the others like it at other points of articulation) is the result of regular changes, Grimm's Law in Germanic, and Grassmann's Law in Sanskrit and Greek.

5.4.3 Verner's Law

A final set of what earlier had seemed to be exceptions to Grimm's Law is explained by Verner's Law (called *grammatical alternation* in older sources; see Chapter 2). Some forms which illustrate Verner's Law are seen in the cognate sets of Table 5.11 (OE = Old English; OHG = Old High German).

TABLE 5.11: Examples illustrating Verner's Law

<i>Sanskrit</i>	<i>Greek</i>	<i>Latin</i>	<i>Gothic</i>	<i>English</i>
(1) <i>saptá</i>	<i>heptá</i>	<i>septem</i>	<i>sibun</i> [siβun]	seven
(2) <i>pitár-</i>	<i>patér</i>	<i>pater</i>	<i>fadar</i> [faðar]	OE <i>fæder</i> 'father'
(3) <i>śatám</i> [śatəm]	(he-) <i>katón</i>	<i>centum</i> [kentum]	<i>hunda</i> (pl.)	hundred
(4) <i>śrutás</i> 'heard'	<i>klutós</i> 'heard'			OE <i>hlud</i> 'loud'
(5)	<i>makrós</i> 'long, slender'	<i>macer</i> [maker]	[OHG <i>magar</i>]	meagre

In cognate set (1), by Grimm's Law we expect the *p* of Sanskrit, Greek and Latin to correspond to *f* in Germanic (Gothic and English), but instead we have Gothic *b* ([β]) and English *v*; given Gothic *b*, we expect the correspondence in Sanskrit to be *bh* and in Greek to be *ph*. Similarly, in cognate sets (2–4) we have the correspondence of Sanskrit, Greek and Latin *t* to Germanic *d*, not the *θ* expected by Grimm's Law in Germanic (and not the Sanskrit *dh* and Greek *th* we would expect, given Germanic *d*). These apparent exceptions to Grimm's Law are

explained by Verner's Law. Verner's Law affects medial consonants; when the Proto-Indo-European accent followed, medial (plain) voiceless stops and fricatives in a root became voiced in Germanic; otherwise (when the accent preceded the sound or when the sound was root-initial) Grimm's Law applied. Since later in Proto-Germanic the accent shifted to the root-initial syllable, the earlier placement of the accent can only be seen when the cognates from the non-Germanic languages are compared. Thus, in the cognate sets of Table 5.11, we see in the Sanskrit and Greek cognates that the accent is not on the initial syllable but is on a later syllable, after the sound that changed, and that the Germanic forms do not match expectations from Grimm's Law in these instances. In (1), we would not expect Gothic *sibun*, but rather something like *sifun*, given the *p* of Sanskrit *saptá* and Greek *heptá*; however, since the accent is on the last syllable in the Sanskrit and Greek forms, Verner's Law gives Gothic *b* in this case. The forms of Table 5.12 show how the forms with the accent later in the word (which undergo Verner's Law, symbolised as ... C ...') contrast with forms with the accent before the sound in question (indicated as '... C...', cases which undergo Grimm's Law).

TABLE 5.12: Examples contrasting the effects of Grimm's Law and Verner's Law on medial consonants

<i>Grimm's Law</i>	<i>Verner's Law</i>
'... C ...	... C ...'
*p > f	*p > b [β]
(1a) OE <i>hēafod</i> 'head'	(1b) Gothic <i>sibun</i> [siβun] 'seven'
Latin <i>cáput</i> [káput]	Sanskrit <i>saptá</i> -
*t > θ	*t > d [ð]
(2a) Gothic <i>brōþar</i> [brōθar] 'brother'	(2b) OE <i>fæder</i> 'father'
Sanskrit <i>bhrátar</i> -	Sanskrit <i>pitár</i> -
*k > x	*k > g [ɣ]
(3a) Gothic <i>taīhun</i> 'ten'	(3b) Gothic <i>tigus</i> 'decade'
Greek <i>déka</i>	Greek <i>dekás</i>

It is easy to see why Verner's Law was also often called 'grammatical alternation' (*grammatischer Wechsel* in German). The accent in Proto-Indo-European fell on different syllables in certain grammatically related forms, as seen in the forms compared in Table 5.13 (PIE = Proto-Indo-European; P-Germ = Proto-Germanic). As a result, Germanic languages have different allomorphs in grammatical paradigms which depend upon whether or not Verner's Law applied, and these grammatical alternations

further support Verner's Law and its correlation with the place of the accent in the proto-language.

TABLE 5.13: Verner's Law in grammatical alternations

	<i>'I become'</i>	<i>'I became'</i>	<i>'we became'</i>	<i>'became [participle]'</i>
PIE	*wértō	*(we)wórtā	*(we)wṛtāmé	*wṛtomós
Sanskrit	vártāmi	va-várta	vavṛtimá	vṛtanáh
	'I turn'	'I have turned'	'we have turned'	'turned'
P-Germ	*werθō	*warθa	*wurðum(i)	*wurðan(a)z
OE	weorþe	warþ	wurdon	worden
OHG	wirdu	ward	wurtum	wortan

Just as expected by Grimm's Law, the Old English forms in the first two columns have /θ/ (spelled <þ>), where the accent in Proto-Indo-European preceded the original *t (as illustrated by the Sanskrit forms). However, in the last two columns, Old English does not have the /θ/ expected by Grimm's Law, but the /d/ of Verner's law because the accent came after this medial *t in Proto-Indo-European, again as shown by the Sanskrit forms. The Old High German forms subsequently underwent other sound changes of their own, but the difference between those with /d/ and those with /t/ has its origin in Verner's Law just as the alternations seen in the Old English cognates. The allomorphic variation which resulted, as for example that seen in the verb paradigm in Table 5.13, illustrates the 'grammatical alternation' that comes from Verner's Law.

So, the Verner's Law cases (as in Tables 5.11, 5.12 and 5.13), which originally appeared to be exceptions to Grimm's Law, turn out also to be explained by regular sound change – by Verner's Law, a conditioned change having to do with the earlier location of the accent.

5.4.4 Indo-European sound laws and regularity of sound change

The laws just considered played an important role in the history of Indo-European studies and as a consequence in the overall history of historical linguistics. Grimm's Law, which was published first (in 1822), was quite general and accounted for the majority of sound correspondences involving the stop series between Germanic and non-Germanic languages. However, as initially formulated, it did appear to have exceptions. When Hermann Grassmann discovered his law (in 1862), a

large block of these 'exceptions' was explained, and then Karl Verner through Verner's Law (in 1877) explained most of the remaining exceptions. This success in accounting for what had originally appeared to be exceptions led the Neogrammarians to the confidence that sound change was regular and exceptionless (see Chapter 2). This is one of the most significant conclusions in the history of linguistics.

5.5 Basic Assumptions of the Comparative Method

What textbooks call the 'basic assumptions' of the comparative method might better be viewed as the consequences of how we reconstruct and of our views of sound change. The following four basic assumptions are usually listed.

(1) The proto-language was uniform, with no dialect (or social) variation. Clearly this 'assumption' is counterfactual, since all known languages have regional or social variation, different styles, and so on. It is not so much that the comparative method 'assumes' no variation; rather, it is just that there is nothing built into the comparative method which would allow it to address variation directly. This means that what is reconstructed will not recover the once-spoken proto-language in its entirety. Still, rather than stressing what is missing, we can be happy that the method provides the means for recovering so much of the original language. This assumption of uniformity is a reasonable idealisation; it does no more damage to the understanding of the language than, say, modern reference grammars do which concentrate on a language's general structure, typically leaving out consideration of regional, social and stylistic variation. Moreover, dialect differences are not always left out of comparative considerations and reconstructions, since in some cases scholars do reconstruct dialect differences to the proto-language based on differences in daughter languages which are not easily reconciled with a single uniform starting point. This, however, has not been common practice outside of Indo-European studies.

Assumptions (2) and (3) are interrelated, so that it is best to discuss them together.

(2) Language splits are sudden.

(3) After the split-up of the proto-language, there is no subsequent contact among the related languages.

These 'assumptions' are a consequence of the fact that the comparative method addresses directly only material in the related languages which is inherited from the proto-language and has no means of its own

for dealing with borrowings, the results of subsequent contact after diversification into related languages. Borrowing and the effects of subsequent language contact are, however, by no means neglected in reconstruction. Rather, we must resort to other techniques which are not formally part of the comparative method for dealing with borrowing and the results of language contact (see Chapters 3, 7 and 12). It is true that the comparative method contains no means for addressing whether the language of some speech community gradually diverged over a long period of time before ultimately distinct but related languages emerged, or whether a sudden division took place with a migration of a part of the community so far away that there was no subsequent contact between the two parts of the original community, resulting in a sharp split and no subsequent contacts between the groups. (Assumptions (2) and (3) are better seen as the consequence of the family-tree model for classifying related languages, dealt with in Chapters 6 and 7, since the tree diagram depicts a parent language splitting up sharply into its daughters.)

(4) Sound change is regular. The assumption of regularity is extremely valuable to the application of the comparative method. Knowing that a sound changes in a regular fashion gives us the confidence to reconstruct what the sound was like in the parent language from which it comes. If a sound could change in unconstrained, unpredictable ways, we would not be able to determine from a given sound in a daughter language what it may have been in the parent language, or, looking at a particular sound in the parent language, we could not determine what its reflexes in its daughter languages would be. That is, if, for example, an original **p* of the proto-language could arbitrarily for no particular reason become *f* in some words, *y* in others, *q'* in others, and so on, in exactly the same phonetic and other linguistic circumstances, then it would not be possible to reconstruct. In such a situation, comparing, say a *p* of one language with a *p* of another related language would be of no avail, if the *p* in each could have come in an unpredictable manner from a number of different sounds.

5.6 How Realistic are Reconstructed Proto-languages?

The success of any given reconstruction depends on the material at hand to work with and the ability of the comparative linguist to figure out what happened in the history of the languages being compared. In cases where the daughter languages preserve clear evidence of what the parent language had, a reconstruction can be very successful, matching

closely the actual spoken ancestral language from which the compared daughters descend. However, there are many cases in which all the daughter languages lose or merge formerly contrasting sounds or eliminate earlier alternations through analogy, or lose morphological categories due to changes of various sorts. We cannot recover things about the proto-language via the comparative method if the daughters simply do not preserve evidence of them. In cases where the evidence is severely limited or unclear, we often make mistakes. We make the best inferences we can based on the evidence available and on everything we know about the nature of human languages and linguistic change. We do the best we can with what we have to work with. Often the results are very good; sometimes they are less complete. In general, the longer in the past the proto-language split up, the more linguistic changes will have accumulated and the more difficult it becomes to reconstruct with full success.

A comparison of reconstructed Proto-Romance with attested Latin provides a telling example in this case. We do successfully recover a great deal of the formerly spoken language via the comparative method. However, the modern Romance languages for the most part preserve little of the former noun cases and complex tense-aspect verbal morphology which Latin had. Subsequent changes have obscured this inflectional morphology so much that much of it is not reconstructible by the comparative method.

5.7 Exercises

Exercise 5.1 Lencan

Compare the cognates from the two Lencan languages (both of which have recently become extinct: Chilanga was spoken in El Salvador; Honduran Lenca was spoken in Honduras). Work only with the consonants in this problem (the changes involving the vowels are too complex to solve with these data alone). (1) Set up the correspondence sets; (2) reconstruct the sounds of Proto-Lencan; (3) find and list the sound changes which took place in each language; and (4) determine what the relative chronology may have been in any cases where more than one change took place in either individual language, if there is evidence which shows this.

NOTE: t' , k' and ts' are glottalised consonants. Also, these data do not provide enough information for you to recover all the consonants of the proto-language, so that it will be difficult to apply steps 5 and 6 here.

The Comparative Method and Linguistic Reconstruction

*Honduran
Lenca*

Chilanga

pe	pe	two
lepa	lepa	jaguar
puki	puka	big
ta	ta	cornfield
tem	tem	louse
ke	ke	stone
kuma	kumam	finger nail, claw
katu	katu	spider
waktik	watih	sandals
kakma	k'ama	gourd
siksik	sisih	shrimp
nek	neh	tooth
insek	ints'eh	beak
taw	t'aw	house
tutu	t'ut'u	flea
kin	k'in	road
kunan	k'ula	who
kelkin	k'elkin	tortilla griddle
sewe	ts'ewe	monkey
saj	ts'aj	five
musu	muts'u	liver
sak-	ts'ih-	to wash
lawa	lawa	three
liwa-	liwa-	to buy
tal-	tal-	to drink
wala	wala	raccoon
was	wal	water
asa	alah	head
wasan	wila	urine
kunan	k'ula	who
wara	wara	river
siri	sirih	star

Historical Linguistics: An Introduction

Honduran Lenca

Chilanga

sili	sili	iron tree (tree species)
siri	sirih	star
suri-sur	ʃurih	squirrel

[NOTE: *suri-sur* involves reduplications; just compare the *suri-* segment of it]

saj-	ʃej-	to want
so	ʃo	rain
sunā	ʃila	flower
soko	ʃoko	white
sak	ʃah	firewood
wewe	wewe	baby
jet-	jete-	to laugh
juku	juku	coyol palm (palm tree species)
kuma	kumam	finger nail, claw
sa	ʃam	good

Exercise 5.2 Finnish–Hungarian

State the sound correspondences which you establish in the following cognates between Finnish and Hungarian (two Finno-Ugric languages); reconstruct a proto-sound for each. Determine the sound changes that these languages have undergone. In this exercise, ignore vowels; concentrate only on the initial sounds of the words in sets I–IV and VII–IX, and on the medial sounds in the sets V–VI and X, and the *l*'s only in set VII. HINT: several of the sets given here are repeated from Table 5.8 in this chapter, and some of the work is already done for you there.

I

Finnish

Hungarian

puu	fa	tree
pitæ-	fy:	keep
poika	fiu:	boy
pesæ	fø:	nest
puhu- speak, blow	fu:(j)-	blow
purki	forr	snow flurry
pææ	fej	head

II

tuo-	toj	take
tutka-	tø:(l)dʲ	tip, point
tunte-	tud	know
tyvi	tø:	base
talvi	te:l	winter

III

kota	ha:z	house, hut
kuole-	hɔl	die
kamara	ha:mlik	skin
kala	hɔl	fish
koi	hɔj-	dawn
kolme	ha:rom	three
kalin	ha:lo:	net
kusi	hu:dʲ	urinate
kuu moon, month	ho:	month

IV

kivi	kø:	stone
keri	ke:reg	bark
kyynel	kønnj	tear (noun)
kæte-	ke:z	hand
kii- rut, mating	ke:j	(carnal) pleasure

V

mete-	me:z	honey
pitæ-	fy:z	keep
sata	sa:z	hundred
kota	ha:z	hut, house
vetæ-	vezet	pull
pata	fɔze:k	pot
kæte-	ke:z	hand
vete-	vi:z	water

VI

pato dam, wall	fɔl	wall
ete-	el	before
piti-	fel	long
tæytæ-	tel	fill
løyte-	lel	find

VII

kuole-	høl	die
nuoli	nji:l	arrow
liemi	leve-	broth
lintu bird	lu:d	goose

VIII

silmæ	sem	eye
salava willow	sil	elm
sarvi	sorv	horn
sata	sa:s	hundred
sydæme-	si:v	heart
siili	sil	hedgehog
seppæ smith	se:p	skilled (beautiful)
suu	sa:j	mouth

IX

syø	ev	eat
suoni	i:n	sinew
sæly-	ellik	load
sææ	e:g	weather
syksy	ø:s	autumn
sappi	epe	gall
syli	ø:l	lap, bosom
sæynæ-	ø:n	biological species (<i>Leuciscus idus</i>)
sula-	olvø(-d)	melt

X

jææ	jeg	ice
myø-	møg	later, after
pii	fog	tooth
vii-	veg	last
sææ	e:g	weather
hiiri	ege:r	mouse
pyy	fogolj	grouse

Exercise 5.3 Jicaquean

Jicaque is a family of two languages in Honduras. Jicaque (Jicaque of El Palmar) is extinct; Tol (Jicaque of La Montaña de la Flor) is still spoken by a few hundred people, but has become extinct or nearly so

The Comparative Method and Linguistic Reconstruction

everywhere except in the village of La Montaña de la Flor. Reconstruct Proto-Jicaque; state the sound correspondences which you encounter in the following cognate sets, and reconstruct a proto-sound for each. State the sound changes that have taken place in each language.

HINT: your reconstruction should include the following sounds:

p	t	ts	k	ʔ	i	ĩ	u
p ^h	t ^h	ts ^h	k ^h		e		o
p'	t'	ts'	k'			a	
		s					
		l					
m	n						
w		j		h			

What happens to each of the proto-sounds which you reconstruct in initial and in final position in these two languages? Can you make guesses about an appropriate reconstruction and sound changes to account for sounds in medial positions?

NOTE: the correspondences involving affricates and sibilants are quite complex, and you will need to pay special attention to the possibilities for combining some of the initial correspondence sets with some of the medial ones as reflecting the same proto-sound. The consonants *p'*, *t'*, *ts'*, *k'* are glottalised. The accent mark on a vowel (for example *á*) means that it is stressed; this is not relevant to the sound changes. In a few cases, a non-initial *h* does not match well in the two languages; ignore this, since it is due to changes for which you do not have enough evidence in these data. The hyphen (-) before some words, as in 9 (-rik), means that these occur with some other morpheme before them which is not relevant and so is not presented here.

	<i>Jicaque</i>	<i>Tol</i>	
1	pe	pe	stone
2	pit	pis	meat
3	piné	piné	big
4	piga-	piʔa-	jaguar
5	pen	pel	flea
6	kamba	kampa	far, long
7	arba-	alpa	above
8	to-bwe	to-pwe	to burn
9	-rik	-lip	lip
10	kek	kep	woman
11	ik	hip	you

Historical Linguistics: An Introduction

	<i>Jicaque</i>	<i>Tol</i>	
12	huruk	hulup	grain (of corn)
13	huk	hup	he, that
14	nak	nap	I
15	-kuk	-kup	we
16	te	te	black
17	tek	tek	leg
18	tebé	tepe	he died
19	tit	tit'	louse
20	mandi	manti	vulture
21	n-gon	n-kol	my belly
22	harek	halek	arrow
23	mak	mak	foreigner
24	n-abuk	n-ajp ^h uk	my head
25	kon	kom	liver
26	kamba	kampa	far, long
27	pirik	pilik	much
28	keré	kelé	nephew
29	mik	mik	nose
30	korok	kolok	spider
31	p ^h e	p ^h e	white
32	p ^h en	p ^h el	arm, shoulder
33	-p ^h a	-p ^h a	dry
34	p ^h ija	p ^h ija	tobacco
35	m-bat	m-p ^h ats'	my ear
36	libi-	lip ^h i	wind
37	p ^h ibih	p ^h ip ^h ih	ashes
38	urubana	(j)ulup ^h ana	four
39	ten	t ^h em	boa constrictor
40	tut	t ^h ut ^h	spit
41	peten	pet ^h el	wasp
42	kun	k ^h ul	fish
43	ke-ke	(k ^h)ek ^h e	agouti

[NOTE: *keke* is a reduplicated form and should be treated as the root *ke-* repeated, rather than as having an intervocalic *-k-*]

44	kan	k ^h an	bed
45	kere	k ^h ele	bone
46	to-gon-	to-k ^h ol	to grind

The Comparative Method and Linguistic Reconstruction

	<i>Jicaque</i>	<i>Tol</i>	
47	kujuh	k ^h ujuh	parrot
48	p̄it	p'is	deer
49	m-bij	m-p'ij	my body
50	p̄ičá	p'isá	macaw
51	-te	-t'e	to cut
52	t̄it	t̄it'	louse
53	-tja	-t'ja	to be late
54	mata	mat'a	two
55	kat	?as	blood
56	kot	?os	I sit, am
57	kaw-	?aw-a	fire
58	kona	?ona	sour
59	kan	?an	zapote (fruit)
60	p̄iga-	p̄i?a-	jaguar
61	te-ga	te-?a	to give
62	čok	sok'	tail
63	čorin	tsolin	salt
64	ču(h)	tsu	blue
65	čiwiri	-tsiwil-	to lie
66	čikin-	tsikin	summer
67	čo?-	tso?-	to nurse
68	čuba	tsupa	to tie
69	nočot	notsots	fly
70	feme	ts ^h eme	horn
71	fijó	ts ^h ijó	dog
72	f̄e(w)	ts ^h ew	scorpion
73	čin	ts'il	hair, root
74	-čun	ts'ul	intestines
75	čoron	ts'olol	oak
76	čih	ts'ih-	caterpillar
77	te-neče	te-nets'e	to sing
78	ločak	lots'ak	sun
79	m-bat	m-p ^h ats'	my ear
80	čot	sots'	owl
81	-č̄i	-s̄i	water
82	čok	sok'	tail

Historical Linguistics: An Introduction

	<i>Jicaque</i>	<i>Tol</i>	
83	pit	pis	meat
84	-mut	mus	smoke
85	hoč(uruk)	hos-	his heart
86	pičá	p'isá	macaw
87	mon	mol	cloud
88	kon	kom	liver
89	ma	ma	land
90	wa	wa	house
91	wara	wala	forehead
92	jo	jo	tree
93	he	he	red
94	harek	halek	arrow

(Data from Campbell and Oltrogge 1980)

Exercise 5.4 K'ichean languages

K'ichean is a subgroup of the Mayan family. Compare these cognate forms and set up the sound correspondences; propose the most appropriate reconstruction for the sound in the proto-language for each, and write the sound changes which account for the developments in the daughter languages. Are any instances found in any of the individual languages in which it is necessary to state what the relative chronology of changes was?

NOTE: ɓ = voiced imploded bilabial stop; t', ts', č', k', q', m', w' = glottalised consonants. In Uspanteko, the accent mark over the vowel, as in ò:x 'avocado', indicates falling tone. Although the correspondence set in which Q'eqchi' *h* corresponds to *x* of the other languages is not found in these data before *u*, ignore this – this correspondence occurs in general with no restrictions that have anything to do with *u*.

<i>Kaqchikel</i>	<i>Tz'utujil</i>	<i>K'iche'</i>	<i>Poqomam</i>	<i>Uspanteko</i>	<i>Q'eqchi'</i>
<i>custard apple</i>					
pak	pak	pak	pak	pak	pak
<i>snail</i>					
pur	pur	pur	pur	pur	pur
<i>thick</i>					
pim	pim	pim	pim	pim	pim
<i>to help</i>					
to?	to?	to?	to?	to?	to?

The Comparative Method and Linguistic Reconstruction

<i>Kaqchikel</i>	<i>Tz'utujil</i>	<i>K'iche'</i>	<i>Poqomam</i>	<i>Uspanteko</i>	<i>Q'eqchi'</i>
<i>to pay</i>					
tox	tox	tox	tox	tox	tox
<i>sweet</i>					
ki?	ki?	ki?	ki?	ki?	ki?
<i>quern (metate)</i>					
ka:?	ka:?	ka:?	ka:?	ka:?	ka:?
<i>parrot</i>					
k'el	k'el	k'el	k'el	k'el	(k'el)
<i>our</i>					
qa-	qa-	qa-	qa-	qa-	qa-
<i>neck</i>					
qul	qul	qul	—	qul	—
<i>resin, pitch</i>					
q'o:l	q'ol	q'o:l	q'o:l	q'o:l	q'o:l
<i>yellow</i>					
q'an	q'an	q'an	q'an	q'an	q'an
<i>tick</i>					
si:p	si:p	si:p	si:p	si:p	si:p
<i>white</i>					
saq	saq	saq	saq	saq	saq
<i>water gourd</i>					
tsuj	tsuj	tsuh	suh	tsuh	suh
<i>good</i>					
uts	uts	uts	us	uts	us
<i>thick</i>					
tsats	tsats	tsats	sas	tsats	sas
<i>dog</i>					
ts'i?	ts'i?	ts'i?	ts'i?	ts'i?	ts'i?
<i>tree, wood</i>					
če:?	če:?	če:?	če:?	če:?	če:?
<i>lime</i>					
ču:n	ču:n	ču:n	ču:n	ču:n	ču:n
<i>pineapple</i>					
č'o:p	č'o:p	č'o:p	č'o:p	č'o:p	č'o:p
<i>hole, cave</i>					
xul	xul	xul	xul	xul	xul
<i>person</i>					
winaq	winaq	winaq	winaq	winaq	kwinq
<i>trousers</i>					
we:f	we:f	we:f	we:f	—	kwe:f

Historical Linguistics: An Introduction

<i>Kaqchikel</i>	<i>Tz'utujil</i>	<i>K'iche'</i>	<i>Poqomam</i>	<i>Uspanteko</i>	<i>Q'eqchi'</i>
<i>genitals, shame</i>					
ja:x	ja:x	ja:x	ja:x	ja:x	ja:x
<i>shade</i>					
mu:x	mu:x	mu:x	mu:x	mù:x	mu:h
<i>avocado</i>					
o:x	o:x	o:x	o:x	ò:x	o:h
<i>ashes</i>					
ča:x	ča:x	ča:x	ča:x	čà:x	ča:h
<i>steambath</i>					
tu:x	tu:x	tu:x	tu:x	tù:x	tu:h
<i>day, sun</i>					
q'i:x	q'i:x	q'i:x	q'i:x	q'ì:x	(-q'ih)
<i>sky</i>					
ka:x	ka:x	ka:x	ka:x	kà:x	—
<i>pine</i>					
čax	čax	čax	čax	čax	čax
<i>flour</i>					
k'ax	k'ax	k'ax	k'ax	k'ax	k'ax
<i>mask</i>					
k'o:x	k'o:x	k'o:x	k'o:x	k'o:x	k'o:x
<i>gopher</i>					
ḃa:h	ḃa:j	ḃa:j	w'a:h	ḃa:h	ḃa:h
<i>bone</i>					
ḃa:q	ḃa:q	ḃa:q	w'a:q	ḃaq	ḃaq
<i>road</i>					
ḃe:j	ḃe:h	ḃe:h	w'e:h	ḃe:h	ḃe:h
<i>smoke</i>					
siḃ	siḃ	siḃ	sim'	siḃ	siḃ
<i>rain</i>					
xaḃ	xaḃ	xaḃ	xam'	xaḃ	haḃ
<i>canoe, trough</i>					
xuku:ʔ	xuku:ʔ	xuku:ḃ	xuku:m'	xuku:ḃ	xuku:ḃ
<i>night</i>					
a:q'aʔ	a:q'aʔ	a:q'aʃ	a:q'am'	a:q'aḃ	(a:q'ḃ)
<i>ear of corn</i>					
xal	xal	xal	xal	xal	hal
<i>tail</i>					
xe:j	xe:j	xe:h	xe:h	xe:h	he:h
<i>mouse, rat</i>					
č'o:j	č'o:j	č'o:h	č'o:h	č'o:h	č'o:h

The Comparative Method and Linguistic Reconstruction

<i>Kaqchikel</i>	<i>Tz'utujil</i>	<i>K'iche'</i>	<i>Poqomam</i>	<i>Uspanteko</i>	<i>Q'eqchi'</i>
<i>flea</i>					
k'jaq	k'jaq	k'jaq	k'aq	k'aq	k'aq
<i>red</i>					
kjaq	kjaq	kjaq	kaq	kaq	kaq
<i>guava</i>					
(i)kjaq'	(i)kjaq'	kjaq'	kaq'	—	—
<i>finger nail</i>					
ifk'jaq	fk'jaq	ifk'jaq	ifk'aq	ifk'aq	—
<i>person</i>					
winaq	winaq	winaq	winaq	winaq	kwinq
<i>ear</i>					
fikin	fikin	fikin	fikin	fikin	(fikn)
<i>woman</i>					
ifoq	ifoq	ifoq	ifoq	—	ifq
<i>big (plural)</i>					
nimaq	nimaq	nimaq	nimaq	nimaq	ninq
<i>ant</i>					
sanik	sanik	sanik	(sanik)	sanik	sank
<i>cloth, kerchief</i>					
suʔt	suʔt	suʔt	suʔt	sù:t'	(suʔut)
<i>blouse</i>					
poʔt	poʔt	poʔt	poʔt	pò:t'	poʔot
<i>corn cob</i>					
piʔq	piʔq	piʔq	piʔq	pì:q'	—
<i>grandmother</i>					
atiʔt	atiʔt	atiʔt	atiʔt	atì:t'	atiʔt
<i>flour</i>					
k'ax	k'ax	k'ax	k'ax	k'ax	k'ax
<i>bitter</i>					
k'aj	k'aj	k'ah	k'ah	k'ah	k'ah
<i>to sell</i>					
k'aj	k'aj	k'aj	k'aj	k'aj	k'aj
<i>blind (dark)</i>					
mo:j	mo:j	mo:j	mo:j	mo:j	mo:j
<i>ashes</i>					
ča:x	ča:x	ča:x	ča:x	čà:x	ča:h
<i>pine</i>					
čax	čax	čax	čax	čax	čax
<i>to wash</i>					
č'ax	č'ax	č'ax	—	č'ax	č'ax

Kaqchikel Tz'utujil K'iche' Poqomam Uspanteko Q'eqchi'

to hit

č'aj č'aj č'aj č'aj — —

Exercise 5.5 Quechua

Compare the cognates from the varieties of Quechua listed here. Set up the correspondence sets; reconstruct the sounds of Proto-Quechuan; find and list the sound changes which took place in each language (variety); determine what the relative chronology may have been in any cases where more than one change took place in an individual language (variety), if there is evidence which shows this. What do you think the inventory of Proto-Quechuan sounds was? (Note that there is some controversy about the historical status of glottalised consonants (p', t', č', k', q') and aspirated consonants (p^h, t^h, č^h, k^h, q^h) in Quechuan. For the purposes of this exercise do not try to reconstruct them, but rather treat those few which occur (in the Cuzco variety) as though they were equal to the plain counterparts.) (NOTE: [ŋ] = uvular nasal.)

<i>Ancash</i>	<i>Junín</i>	<i>Cajamarca</i>	<i>Amazonas</i>	<i>Ecuador</i>	<i>Ayacucho</i>	<i>Cuzco</i>	<i>gloss</i>
paka-	paka-	paka-	paka-	paka-	paka-	paka-	begin
apa-	apa-	apa-	apa-	apa-	apa-	apa-	wash
rapra	lapla	rapra	rapra	—	rapra	raɸra	leaf, wing
pampa	pampa	pamba	pamba	pamba	pampa	pampa	plains
tapu-	tapu-	tapu-	tapu-	tapu-	tapu-	tapu-	ask
wata-	wata-	wata-	wata-	wata-	wata-	wata-	tie
utka	utka	utka	utka	—	utka	usk ^h a	cotton
inti	inti	indi	indi	indi	inti	inti	sun
kimsa	kimsa	kimsa	kimsa	kimsa	kimsa	kimsa	three
puka	puka	—	puka	puka	puka	puka	red
haksa-	saksa-	saksa-	saχsa-	saχsa-	saksa-	saχsa-	be full, fed up
kun̥ka	kun̥ka	kun̥ga	kun̥ga	kun̥ga	kun̥ka	kun̥ka	neck
qam	am	qam	kam	kaŋ	χam	qaŋ	you (sg.)
qoha	usa	qosa	kusa	kusa	χosa	qosa	husband
waga-	waʔa-	waga-	waka-	waka-	waχa-	waqa-	cry
hoχta	suʔta	soχta	sukta	suxta	soχta	soχta	six
heŋga	siŋʔa	seŋga	siŋga	siŋga	seŋχa	seŋqa	nose
tsaki	čaki	čaki	čaki	čaki	čaki	č'aki	dry

The Comparative Method and Linguistic Reconstruction

<i>Ancash</i>	<i>Junín</i>	<i>Cajamarca</i>	<i>Amazonas</i>	<i>Ecuador</i>	<i>Ayacucho</i>	<i>Cuzco</i>	<i>gloss</i>
mutsa-	muča-	muča-	muča-	muča-	muča-	muč'a-	kiss
mantša-	manča-	manča-	manča-	manča-	manča-	manča-	fear, be afraid
putška-	pučka-	pučka-	pučka-	puška-	pučka-	puska-	to thread
e:tsa	ajča	ajča	e:ča	ajča	ajča	ajča	meat
čaki	čaki	čaki	čaki	čaki	čaki	čaki	foot
kača-	kača-	kača-	kača-	kača-	kača-	kača-	send
učpa	učpa	učpa	učpa	uška-	učpa	usph ^a	ashes
kički	kički	kički	kički	kiški	kički	k'iski	narrow
haru-	salu-	saru-	saru-	saru-	saru-	saru-	to step on
hara	sala	sara	sara	sara	sara	sara	maize, corn
qaha	asa	qasa	kasa	kasa	χasa	qasa	ice
isgoŋ	isʔuŋ	isqoŋ	ifkuŋ	ifkuŋ	isχoŋ	esqoŋ	nine
—	ajsa-	ajsa-	e:sa-	ajsa-	ajsa-	ajsa-	pull
fuška	fuška	fuška	fuška	—	suška	suška	feather
wafa	wafa	wafa	wafa	wafa	wasa	wasa	behind
ifke:	ifkaj	ifkaj	ifke:	iška	iskaj	iskaj	two
hatuŋ	hatuŋ	atuŋ	atuŋ	hatuŋ	hatuŋ	hatuŋ	big
hutsa	huča	uča	uča	huča	huča	huča	fault
humpi	humpi	—	umbi	humbi	humpi	hump'i	sweat
laki	ʔaki	zaki	ʔaki	zaki	ʔaki	ʔaki	pain, trouble
kila	kiʔa	kiʔa	kiʔa	kiʔa	kiʔa	kiʔa	moon
alba	aʔpa	aʔpa	aʔpa	aʔpa	aʔpa	haʔp'a	land
ajlu	ajʔu	ajʔu	e:ju	ajʔu	aʔju	ajʔu	family
rima-	lima-	rima-	rima-	rima-	rima-	rima-	to speak
karu	kalu	karu	karu	karu	karu	karu	far
warmi	walmi	warmi	warmi	warmi	warmi	warmi	woman
waχra	waʔla	waχra	wakra	—	waχra	waχra	horn
nina	nina	nina	nina	nina	nina	nina	fire
jana	jana	jana	jana	jana	jana	jana	black
wajna	wajna	wajna	wajna	wajna	wajna	wajna	young man
aŋja-	aŋja-	aŋja-	aŋja-	aŋja-	aŋja	aŋja-	to reprove
nawi	nʔawi	nʔawi	nʔawi	nʔawi	nʔawi	nʔawi	eye
wanu-	wanʔu-	wanʔu-	wanʔu-	wanʔu-	wanʔu-	wanʔu-	to die
qepa	ipa	qepa	kipa	kipa	χepa	qh ^a epa	behind

Historical Linguistics: An Introduction

<i>Ancash</i>	<i>Junín</i>	<i>Cajamarca</i>	<i>Amazonas</i>	<i>Ecuador</i>	<i>Ayacucho</i>	<i>Cuzco</i>	<i>gloss</i>
weqe	wiʔi	—	wiki	wiki	weXe	weqe	tear(drop) (noun)
qeʃpi-	iʃpi-	—	kiʃpi-	kiʃpi-	Xeʃpi-	qeʃpi-	to escape
qo-	u-	qo-	—	ku-	Xo-	qo-	to give
qoŋGa-	uŋʔa-	qoŋGa-	kuŋga-	kuŋga-	XoŋXa-	qoŋqa-	to forget

6

Linguistic Classification

Stability in language is synonymous with rigor mortis.
(Ernest Weekley)

6.1 Introduction

How are languages classified and how are family trees established? *Subgrouping*, as the classification of related languages is called, is an important part of historical linguistics, and methods and criteria for subgrouping are the focus of this chapter. Before turning to these methods, however, let us first look briefly at some of the *language families* around the world.

6.2 The World's Language Families

There are more than 250 established language families in the world; some indication of where these families are found and how many of them there are in each region is seen in Table 6.1. However, historical

TABLE 6.1: Distribution of language families in the world

Americas:	c. 150+ language families, 2,000+ languages
New Guinea	
(Papuan):	c. 60+ language families, 750–800 languages
Australia:	26 language families, c. 250 languages
Africa:	c. 20+ families, 2,500+ languages
Europe + Asia:	37 families (18 = isolates)
Europe:	3 surviving families (Indo-European, Uralic, Basque)

linguistic research has reached an advanced state in only a few of these. For example, Sino-Tibetan (c. 300 languages) is an extremely important family, since its languages are spoken by more people than those of any other language family in the world. Nevertheless, comparative linguistic research in this family is actually quite recent, flourishing only in the last twenty-five years. Its classification has been and continues to be controversial, with many Chinese scholars placing the Hmong-Mien (Miao-Yao) and Tai-Kadai languages also in the family, where most other scholars limit the family to the Chinese and Tibeto-Burman languages. A few of the better-known families, together with an indication of the state of comparative linguistic research in each, are presented in Table 6.2.

TABLE 6.2: Some of the better-known language families

Algonquian (North America, c. 35 languages, very advanced)
Athabaskan (North America, c. 30 languages, relatively good)
Austronesian (c. 800 languages, relatively good, much remains to be done in branches)
Bantu (c. 400 languages, moderate)
Berber (North Africa, c. 35 languages, much needed)
Cariban (South America, c. 60 languages, much needed)
Chadic (Africa, c. 140 languages, work needed)
Chibchan (Central and South America, c. 20 languages, moderately good)
Cushitic (Africa, c. 40 languages, much needed)
Dravidian (c. 25 languages, moderate)
Hmong-Mien (Miao-Yao; c. 15 languages, much needed)
Indo-European (includes c. 25 Romance languages, many Iranian and Indic languages, c. 85 languages in Europe; the most studied of all language families)
Kartvelian (South Caucasian, 4 languages, advanced)
Maipurean (Arawakan) (South America, 65 languages, much needed)
Mayan (Mexico and Central America, 31 languages, very advanced)
Mon-Khmer (more than 100 languages, much needed)
Munda (India, c. 25 languages, much needed)
North Caucasian (30–35 languages, much needed)
Otomanguean (Mexico and Central America, c. 40 languages, good)
Pama-Nyungan (Australia, c. 195 languages, family status not confirmed, much needed)
Salishan (North America, 23 languages, good)
Semitic (20–25 languages, moderately good)
Sino-Tibetan (c. 300 languages, much needed)

Siouan (North America, c. 20 languages, good)

Tai (c. 40 languages, moderate)

Tupian (South America, c. 60 languages, much needed)

Turkic (25–35 languages, moderate)

Uralic (northern Eurasia, c. 25 languages, highly advanced)

Uto-Aztecan (c. 35 languages, advanced)

6.3 Terminology

Linguistic classification is about the relationships among languages (and language varieties); to see how it works, it is important to understand the terminology used. *Subgrouping* is about the internal classification of the languages within language families; it is about the branches of a family tree and about which sister languages are most closely related to one another. The terminology employed in linguistic classifications can be confusing, since the terms are not always used consistently and there is controversy concerning the validity of some of the kinds of entities which some labels are intended to identify. Therefore, it is important to begin by clarifying this terminology. In linguistic classification, we need names for a range of entities which distinguish language groups of greater and lesser relatedness, that is, entities with different degrees of internal diversity (time depth), each more inclusive than the level below it. *Dialect* means only a variety (regional or social) of a language, which is mutually intelligible with other dialects of the same language. 'Dialect' is not used in historical linguistics to mean a little-known ('exotic') or minority language, and it is no longer used to refer to a daughter language of a language family, though the word has sometimes been used in these senses. *Language* means any distinct linguistic entity (variety) which is mutually unintelligible with other such entities. A language *family* is a group of genetically related languages, that is, languages which share a linguistic kinship by virtue of having developed from a common ancestor. Many linguistic families are designated with the suffix *-an*, as in, for example, *Algonquian*, *Austronesian*, *Indo-European*, *Sino-Tibetan* and so on. In recent times, many scholars have begun to use the term *genetic unit* to refer to any language family or isolate. An *isolate* is a language which has no known relatives, that is a family with but a single member. Some of the best-known isolates are Ainu, Basque, Burushaski, Etruscan, Gilyak (Nivkh), Sumerian, Tarascan, Zuni, and several others in the Americas.

Language families can be of different magnitudes; that is, they can involve different time depths, so that some larger-scale families may

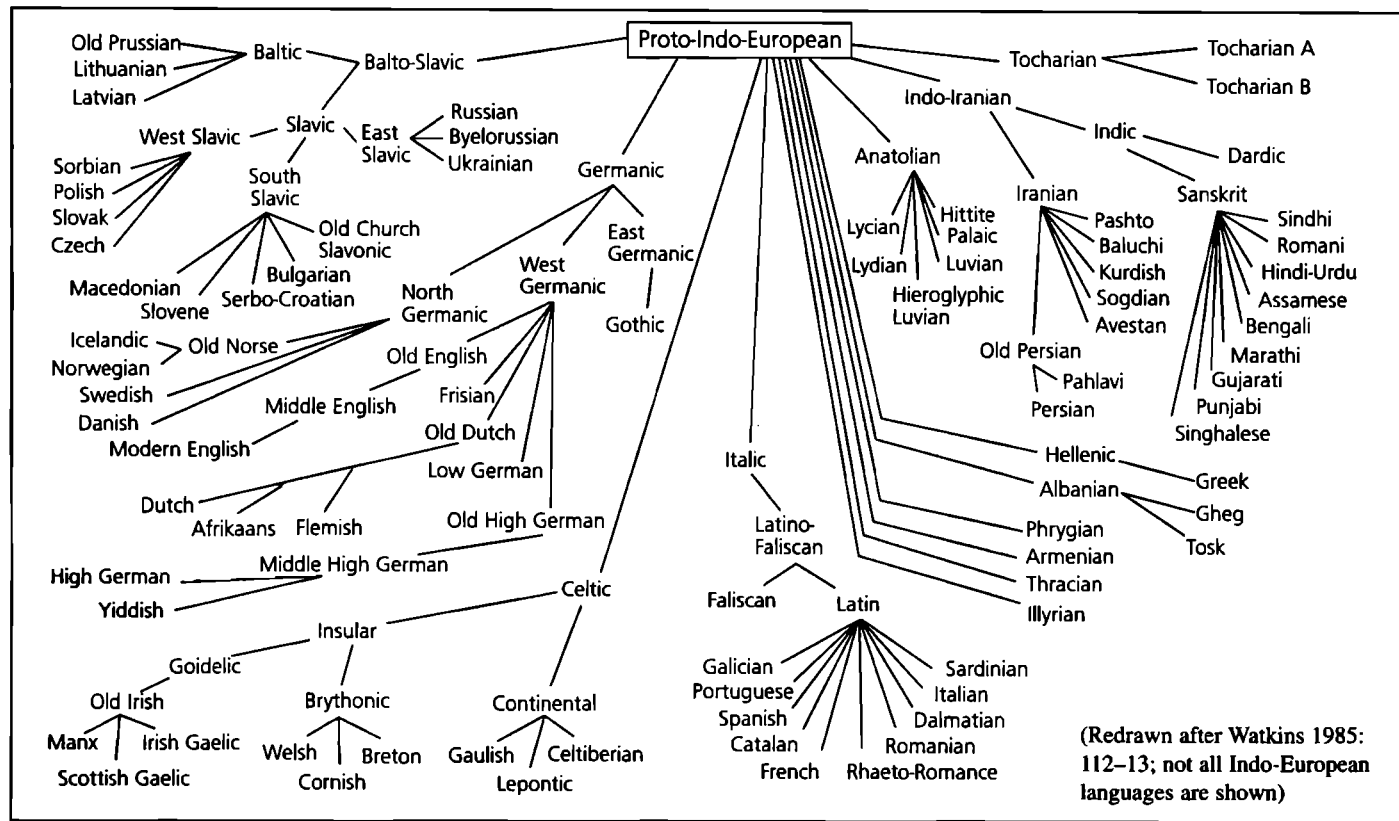
include smaller-scale families among their members or branches. Unfortunately, however, a number of confusing terms have been utilised in attempts to distinguish more inclusive from less inclusive family groupings. The term *subgroup* (also called *subfamily*, *branch*) is relatively straightforward; it is used to refer to a group of languages within a language family which are more closely related to each other than to other languages of that family – that is, a subgroup is a branch of a family. As a proto-language (for example, Proto-Indo-European) diversifies, it develops daughter languages (such as Proto-Germanic, Proto-Celtic and so on, in the case of Indo-European); if a daughter (for instance Proto-Germanic) then subsequently splits up and develops daughter languages of its own (such as English, German and so on), then the descendants (English, German and others, in the case of Germanic) of that daughter language (Proto-Germanic) constitute members of a subgroup (the Germanic languages), and the original daughter language (Proto-Germanic) becomes in effect an intermediate proto-language, a parent of its own immediate descendants (its daughters, English, German and so on), but still at the same time a descendant (daughter) itself of the original proto-language (Proto-Indo-European).

A number of terms have also been used for postulated but unproven higher-order, more inclusive families (proposed distant genetic relationships); these include *stock*, *phylum* and the compounding element ‘*macro-*’ (as in *Macro-Mayan*, *Macro-Penutian*, *Macro-Siouan* and the like). These terms have proved confusing and controversial, as might be expected when names are at stake for entities that are not fully agreed to exist. In order to avoid confusion and controversy, none of these terms should be used. That is, the term *family* is sufficient and clear. Since the entities called ‘stock’, ‘phylum’ and ‘macro-’ would be bona fide language families if they could be established (demonstrated) on the basis of the linguistic evidence available, and they will not be families if the proposals which they embody fail to hold up, it is much clearer to refer to these proposed but unsubstantiated proposed relationships as ‘proposed distant genetic relationships’ or ‘postulated families’. The question of distant genetic relationships – how to determine whether languages not yet known to be related to one another may be distantly related – is much debated (see Chapter 13).

6.4 How to Draw Family Trees: Subgrouping

Subgrouping is the internal classification of language families to determine which sister languages are most closely related to one another. It

is common for a language over time to diversify, to split up into two or more daughter languages (with the consequence that the earlier language ceases to be spoken except as reflected in its descendants) – this means that the original language comes to constitute a proto-language. After the break-up of the original proto-language, a daughter language (for example, Western Romance, which split off from Proto-Romance) may itself subsequently diversify into daughters of its own (Western Romance split up into Spanish, Portuguese, French and others). This gives the first daughter language to branch off (Western Romance in our example) an intermediate position in the family tree – it is a daughter of the original proto-language (Proto-Romance) and it is an ancestor to its own daughters (Western Romance is the parent of Spanish, Portuguese and French). So, the languages which branch off from the intermediate language (Western Romance) belong to the same subgroup (Spanish, Portuguese and French are more immediate daughters of Western Romance, thus belonging to the Western Romance subgroup, which itself belongs to the Romance family). A subgroup, then, is all the daughters which descend from an ancestor (intermediate proto-language) which itself has at least one sister. To say that certain languages belong to the same subgroup means that they share a common parent language which is itself a daughter of a higher-order proto-language, just as English is a descendant of Proto-Germanic (together with its other Germanic sister languages, such as German, Swedish, Icelandic and others) and so is a member of the Germanic subgroup, which in turn is a daughter of (branch of) Proto-Indo-European, together with other subgroups (such as Slavic, Italic, Celtic, Indo-Iranian and so on, which have their own later daughter languages). Also, after the break-up of the original proto-language, a daughter language may remain unified; such a language which branches off directly from the proto-language and does not later split up into other languages constitutes a subgroup (branch) of the family all by itself, a subgroup with only a single member. The goal of subgrouping is to determine which languages belong to intermediate parents. The purpose of subgrouping is to determine the family tree for genetically related languages. An example of a family tree has already been seen in Chapter 5 in Figure 5.1 for the Proto-Romance family tree, and the family tree of the Mayan languages is given below in Figure 6.3. Since examples from the Indo-European and Uralic families are cited frequently in this book, and because so much historical linguistic work has been done on these, their family trees are presented in Figures 6.1 and 6.2.



(Redrawn after Watkins 1985: 112–13; not all Indo-European languages are shown)

FIGURE 6.1: The Indo-European family tree

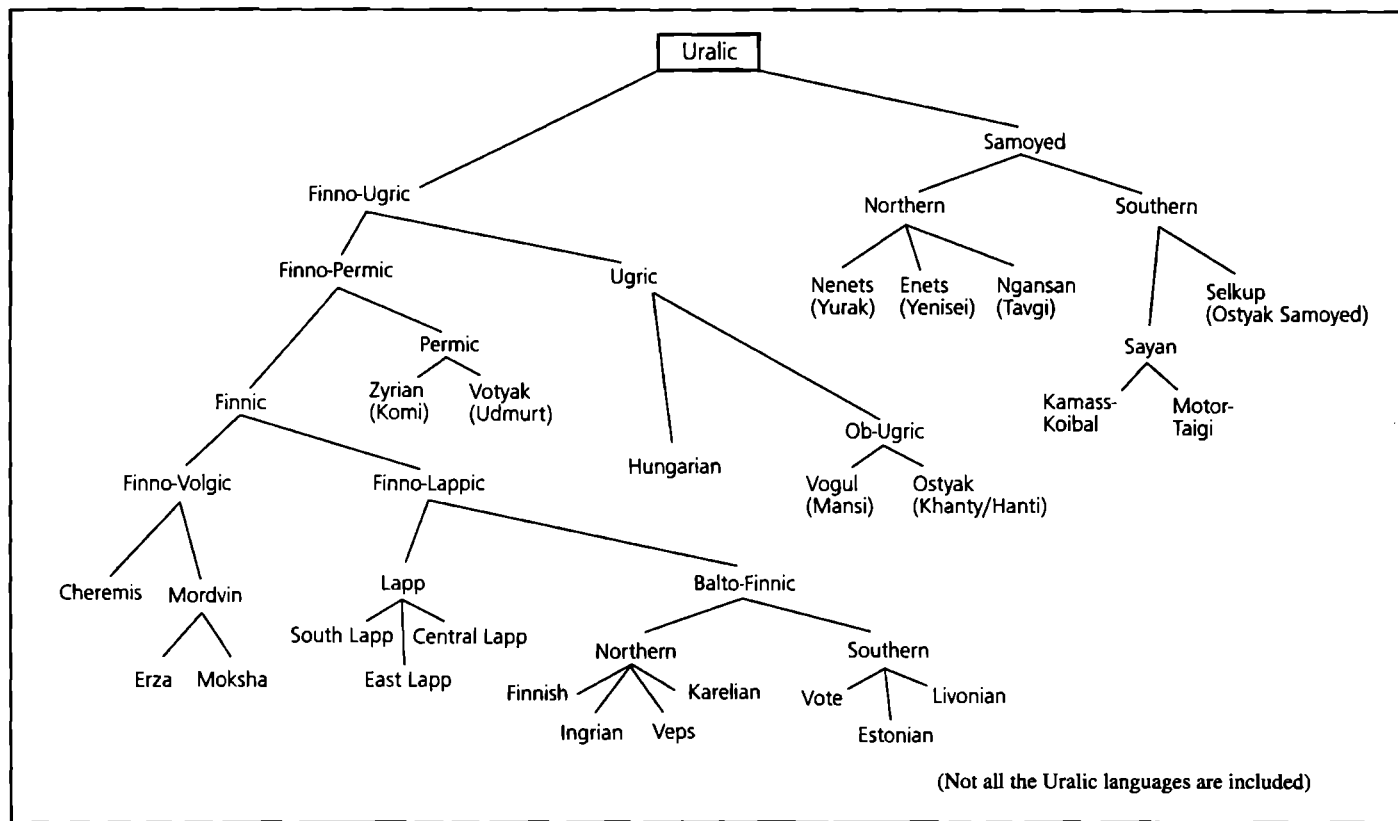


FIGURE 6.2: The Uralic family tree

The only generally accepted criterion for subgrouping is *shared innovation*. A shared innovation is a linguistic change which shows a departure (innovation) from some trait of the proto-language and is shared by a subset of the daughter languages. It is assumed that a shared innovation is the result of a change which took place in a single daughter language which then subsequently diversified into daughters of its own, each of which inherits the results of the change. Thus the innovation is shared by the descendants of this intermediate parent but is not shared by languages in other subgroups of the family, since they do not descend from the intermediate parent that underwent the change which the more closely related languages share through inheritance from their more immediate parent. The fact that they share the innovation means that they contain evidence which suggests that they were formerly a unified language which underwent the change and then subsequently split up, leaving evidence of this change in its daughters.

The classification of the Mayan languages will serve as a guided exercise to illustrate how subgrouping is done, and we will examine how shared innovations among these languages determine their subgrouping. Let us look first at the classification which has been established, given in the family tree in Figure 6.3, and then we will consider some of the shared innovations upon which the subgrouping is based.

Given that there are thirty-one Mayan languages and each has undergone several sound changes, we consider only a subset of the many shared innovations to give an idea of how subgroups are established. The following is a list of the major sound changes which are innovations shared among some but not others of the languages of the family. These form the basis for subgrouping the Mayan languages.

- (1) *w > b
- (2) *h > w /__ o, u (*h became w before round vowels)
- (3) *ŋ > h
- (4) -h > -y (final h became y)
- (5) *-b > -ʔ / VCV__# (in polysyllabic forms, final imploded b became a glottal stop)
- (6) *h > ʔ
- (7) *r > t
- (8) *t > č
- (9) *č > ʧ (palato-alveolar affricate became a laminal retroflexed affricate)
- (10) *-t > -č (word-final t changed to č)
- (11) *e: > i, *o: > u (long mid vowels raised to high vowels)
- (12) *ŋ > x (velar nasal became a fronted velar fricative)

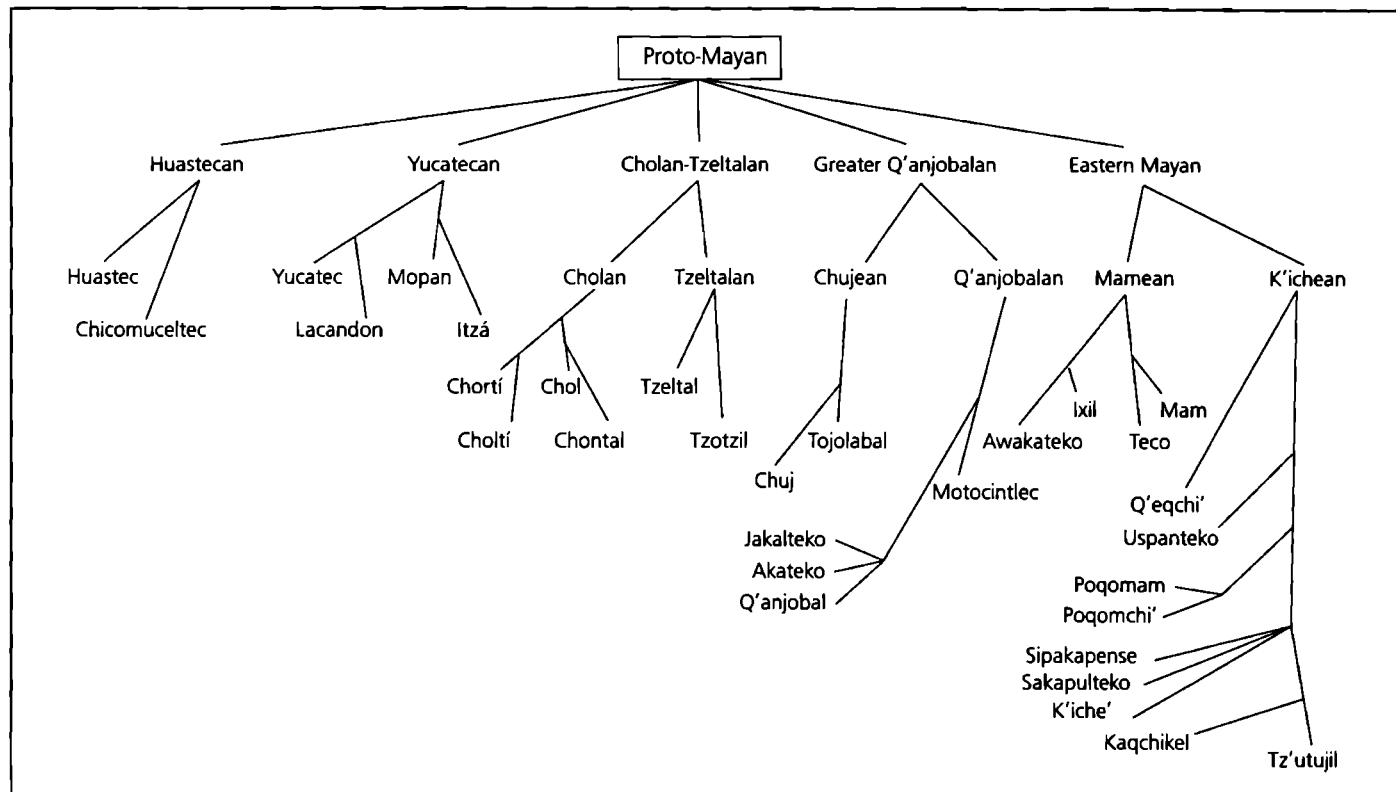


FIGURE 6.3: Mayan subgrouping

- (13) *t̥ > é (a fronted *t* (dental or palatalised) changed to *é*, a prepalatal affricate)
- (14) *CV?VC > CV?C
- (15) é > ě (the prepalatal affricates became palato-alveolar)
- (16) *q > k, *q' > k' (the uvular stops became velars)
- (17) *ŋ > n
- (18) *ts > s

(Note that innovations in morphology and syntax are just as important as phonological innovations. Examples involving sound change are utilised here only because it takes less space to describe them than changes in other areas of the grammar do.)

Let us begin by looking at the lower-level groupings (the languages most closely related) for ease of illustration. In the Huastecan subgroup, Huastec and Chicomuceltec share the changes (1), (2) and (3). Other Mayan languages did not undergo these changes. We interpret this to mean that Huastec and Chicomuceltec belong together as members of a single subgroup: while Proto-Huastecan was still a unified language, it underwent these sound changes (and others not presented here). After having undergone these changes, Proto-Huastecan split up into its two daughter languages, Huastec and Chicomuceltec. As a consequence of this shared history, when we examine cognates, we see in both Huastec and Chicomuceltec that the cognates show the results of these sound changes, shared innovations, not shared by the cognates in the other Mayan languages. Looking backwards, it is because they share these innovations that we postulate that there was an earlier unified Proto-Huastecan language which underwent these changes before it diversified into the two daughter languages of this branch of the family.

Kaqchikel and Tz'utujil share the two innovations (4) and (5), which show that these two languages are more closely related to one another than to the others, since none of the others has evidence of these changes. Here we assume that there was a unified language which underwent the two changes and then after the changes split up into Kaqchikel and Tz'utujil, accounting for why these two languages share the results of these changes. The alternative would require us to assume that these two languages are not closely related but just happened independently to undergo changes (4) and (5). Such a coincidence is not likely.

The four Mamean languages, Ixil, Awakateko, Mam and Teco, share a series of innovations, (6) through (9) (and others not mentioned here); these include a chain shift in which Proto-Mayan (PM) **r* became *t* (7), while **t* in turn became ě (8), and **č* in turn changed to Mamean č (9) (a chain shift mentioned in Chapter 3).

The four Yucatecan languages (Yucatec, Lacandon, Mopan and Itzá) share innovation (10) (final *-t* > *-č*), among others.

The Cholan languages, but no others, share change (11) (raising of long mid vowels, **e*: > *i*, **o*: > *u*).

At higher, more inclusive levels of the classification, all the languages of the K'ichean and Mamean groups share the innovations (12) through (14), showing that they all descend from a common parent language, Proto-Eastern Mayan, which had itself branched off from Proto-Mayan.

We proceed in this fashion (not all the evidence is presented here) until we have worked out the classification of all the Mayan languages and subgroups, both lower-level and higher-order ones, and it is on this basis that we draw the family tree presented in Figure 6.3.

It might seem that just a list of shared similarities might be enough to distinguish more closely related languages from more distantly related ones within a language family. However, not just any similarity provides reliable evidence of closer affinity. For example, it is important to keep in mind that *shared retentions* are of practically no value for subgrouping. A shared retention is merely something that different daughter languages inherit unchanged from the proto-language regardless of whether the daughters belong to the same subgroup or not. For example, Huastec, Mam and Motocintlec (which, as seen in Figure 6.3, belong to separate branches of the family) retain the vowel-length contrast, but this is not evidence that these three necessarily belong to a single subgroup of Mayan. Rather, since Proto-Mayan had contrastive vowel length, the fact that Huastec, Mam and Motocintlec share this trait means only that these three still retain unchanged something that Proto-Mayan had, and they could retain this inherited trait regardless of whether they belonged together to a single subgroup or to separate subgroups each of which independently retained this feature of the proto-language. Shared retentions just do not reveal which languages share a period of common history *after* the break-up of the proto-language.

Although shared innovation is the only generally accepted criterion for subgrouping, not all shared innovations are of equal value for showing closer kinship. Some shared innovations represent sound changes that are so natural and happen so frequently cross-linguistically that they may easily take place independently in different branches of a language family and thus have nothing to do with a more recent common history. For example, in Mayan, change (16) (**q* > *k*, **q'* > *k'*) took place in all the languages of the Huastecan, Yucatecan and Cholan-Tzeltalan branches, as well as in some of the Greater Q'anjobalan languages. However, since uvular stops (*q* and *q'*) are rarer in languages

in general than velars and are more difficult to produce than velars (k and k'), and since they easily and frequently change to velars, the fact that change (16) is shared by languages of these branches does not necessarily mean that a single change took place in some more immediate ancestor of these languages before they split up; it is just as likely that the uvulars changed to velars independently in different languages within the family. Change (17) ($*\eta > n$) took place in the Yucatecan, Cholan-Tzeltalan and some of the Greater Q'anjobalan languages, but velar nasals (η) can easily become alveolar nasals (n), a change frequently found in the world's languages. In these two cases (changes (16) and (17)), it is assumed that these branches of Mayan independently underwent these very common sound changes, and that they therefore provide no strong evidence for subgrouping. They merely represent independent, convergent innovations. Obviously, such changes are not of as much value for subgrouping as other less expected changes are. A very telling example of this sort is the loss of the vowel-length contrast through the merger of long vowels with their short counterparts in Cholan and in some dialects of Kaqchikel. This is perfectly understandable, since the loss of vowel length is a very common change which languages seem easily to undergo. In this case, it would be ludicrous to imagine that Chol and the Kaqchikel dialects without the length contrast formed one branch of the family while the Kaqchikel dialects which maintain the contrast belong to a totally distinct branch. Clearly, the seemingly shared innovation of loss of vowel length came about independently in the two instances. The very natural, very frequent changes are candidates for convergent development (innovations shared due to independent change rather than to inherited results from a single change in the immediate parent), changes such as nasalisation of vowels before nasal consonants, intervocalic voicing, final devoicing, palatalisation before i or j and so on.

Finally, some sound changes can be borrowed among related languages, and this can complicate the subgrouping picture. For example, Q'eqchi', Poqomam and Poqomchi' share change (18) ($*ts > s$); however, documents from the sixteenth and seventeenth centuries reveal that this change took place long after these three were independent languages and that the change is borrowed, diffused across language boundaries (see Chapters 3 and 12). Naturally, if the change is borrowed from one language to another after they had become separate languages, this does not reflect a time of common history when a single language underwent a change and then subsequently split up, leaving evidence of the change in its daughter languages. Therefore, borrowed changes,

which may appear to be shared innovations, are also not evidence of subgrouping.

While shared innovation as the only reliable criterion for subgrouping is clear, it must be kept in mind that the subgrouping can be only as successful as the reconstruction upon which it is based. That is, what constitutes an innovation depends crucially on what is reconstructed, and if the reconstruction is wrong, there is a strong possibility that the subgrouping which depends on it will be wrong as well. Let's consider an example illustrated by Nootkan (a family of three languages, Makah, Nitinat and Nootka, spoken in the Northwest Coast area of North America). Consider the sound correspondences presented in Table 6.3. (See Haas 1969b; some of the Nootkan correspondences and changes were seen in Chapter 5.)

TABLE 6.3: Some Nootkan sound correspondences

	<i>Makah</i>	<i>Nitinat</i>	<i>Nootka</i>	<i>Proto-Nootkan</i>
(1)	q'	ʕ	ʕ	*q'
(2)	χ	χ	h	*χ
(3)	b	b	m	*m
(4)	d	d	n	*n

Let us begin with what is considered the correct reconstruction and subgrouping before considering the consequences of erroneous alternatives. Proto-Nootkan is reconstructed with *q' for (1), *χ (voiceless uvular fricative) for (2), *m for (3) and *n for (4); Nitinat and Nootka are subgrouped together, and Makah split off the family first. This interpretation is based on the fact that Nitinat and Nootka share, for example, the innovation in (1) in which glottalised uvular stops (represented by q' here) changed to pharyngeal ʕ. While Makah and Nitinat seem to share the innovation (in (3) and (4)) that the Proto-Nootkan nasals (represented by *m and *n here) became corresponding voiced oral stops (b and d, respectively), this change came about through diffusion in the linguistic area after Makah and Nitinat had separated. Nitinat and Makah belong to the area of the Northwest Coast of North America where several languages lack nasal consonants (see Chapters 2 and 12). In (2), since only Nootka changed (*χ > h), Makah and Nitinat share only the retention of χ, not evidence for subgrouping. However, suppose now that for (2) we were to reconstruct (erroneously) *h (pharyngeal fricative) for Proto-Nootkan; this would presuppose the change of *h to χ in Makah and Nitinat, and this would be a shared innovation, evidence

to support subgrouping them together and Nootka apart. As this shows, subgrouping is very much at the mercy of how accurate the reconstruction upon which it is based is. In this case, if we did not recognise that the change from nasals to corresponding voiced stops in (3) and (4), $*m > b$ and $*n > d$, was due to borrowing and we reconstructed erroneously $*b$ and $*d$ instead, with the assumption that Nootka changed these to nasals, nothing would follow for subgrouping, since Nootka alone would change and Makah and Nitinat would only share a retention.

The Mayan subgrouping, considered above, provides a final example, though it is simplified here in that we will consider only one of many sound correspondences together with the changes and the reconstruction based on it. In the Mayan family, the lower-level subgroups are well established; these include Huastecan, Yucatecan, Cholan-Tzeltalan, Greater Q'anjobalan, K'ichean and Mamean. Some of these are grouped together in higher-order, more inclusive branches of the family; we must ask what the evidence for these larger subgroupings is and whether it is accurate. Consider the following sound correspondence:

Huastecan h : Yucatecan n : Cholan-Tzeltalan n : Q'anjobalan η :
K'ichean $\bar{x}$: Mamean x

The generally accepted reconstruction in this case is Proto-Mayan $*\eta$ (where it is assumed that Huastecan independently changed $*\eta > h$ (change (3) in the list above), and so we will leave it out of the rest of the discussion). K'ichean and Mamean share the change of $*\eta > \bar{x}$ (change (12) above; $\bar{x}$ then later changed to x in Mamean and in most of the K'ichean languages), and this shared innovation (together with others mentioned above) supports subgrouping K'ichean and Mamean together; the group is usually called Eastern Mayan. In this reconstruction for the correspondence set that Proto-Mayan $*\eta$ is based on, Yucatecan, Cholan-Tzeltalan and Q'anjobalan each retain the nasal (where it is assumed that the change of $\eta > n$ is so natural and easy that Yucatecan and Cholan-Tzeltalan probably underwent it independently), and since this is a shared retention (if viewed this way), nothing follows for whether or not these three groups may have a closer kinship or not. However, K'ichean and Mamean share the innovation $*\eta > \bar{x}$, which is grounds for subgrouping them together. Suppose hypothetically now that this reconstruction were wrong and that Proto-Mayan actually had $*\bar{x}$ (although this is highly unlikely). In this case, K'ichean and Mamean would share not an innovation but merely a retention, and nothing

would follow from this for their position within the family. However, Yucatecan, Cholan-Tzeltalan and Greater Q'anjobalan would all share an innovation to a nasal ($*\bar{x} > \eta$, then later $\eta > n$ in Yucatecan and Cholan-Tzeltalan), and this would be evidence for classifying Yucatecan, Cholan-Tzeltalan and Greater Q'anjobalan as members of the same subgroup. That is, if the reconstruction of $*\eta$ is wrong, then the subgrouping based on the shared innovations which depart from this reconstruction is also not founded; if the reconstruction with $*\bar{x}$ is wrong (which is almost certainly the case), then any subgrouping which presupposes it must also be wrong (unless other shared innovations can be found which do support it).

6.5 Glottochronology (Lexicostatistics)

Not all methods of classification that have been proposed are reliable. Glottochronology is a well-known one which is still sometimes used but which has been rejected by most historical linguists. In what follows, it is discussed in some detail, not because it merits such attention, but because it has proven particularly misleading and it is important to understand why it should be avoided. It is sometimes likened to ^{14}C ('carbon 14') dating in archaeology. Given the attention it has received (and continues to receive in some quarters), it is important to understand why it does not work for subgrouping, or for any other purpose, for that matter.

Though the names *glottochronology* and *lexicostatistics* are usually used interchangeably, some make a distinction; *glottochronology* is defined as a method with the goal of assigning a date to the split-up of some language into daughter languages, whereas *lexicostatistics* is given the definition of the statistical manipulation of lexical material for historical inferences (not necessarily associated with dates). Lexicostatistics in this sense is broader. However, in actual practice, this distinction is almost never made; both names are used interchangeably.

6.5.1 Basic assumptions

There are four basic assumptions of glottochronology, all of which have been challenged. We will look at each in turn and consider some of the criticisms that have been raised concerning them.

(1) *Basic vocabulary*. The first assumption is that there exists a *basic* or *core vocabulary* which is universal and relatively culture-free, and

thus is less subject to replacement than other kinds of vocabulary. The Swadesh 100-word list of basic vocabulary is:

1. I	26. root	51. breast	76. rain
2. you	27. bark	52. heart	77. stone
3. we	28. skin	53. liver	78. sand
4. this	29. flesh	54. drink	79. earth
5. that	30. blood	55. eat	80. cloud
6. what	31. bone	56. bite	81. smoke
7. who	32. egg	57. see	82. fire
8. not	33. grease	58. hear	83. ash
9. all	34. horn	59. know	84. burn
10. many	35. tail	60. sleep	85. path
11. one	36. feather	61. die	86. mountain
12. two	37. hair	62. kill	87. red
13. big	38. head	63. swim	88. green
14. long	39. ear	64. fly	89. yellow
15. small	40. eye	65. walk	90. white
16. woman	41. nose	66. come	91. black
17. man	42. mouth	67. lie	92. night
18. person	43. tooth	68. sit	93. hot
19. fish	44. tongue	69. stand	94. cold
20. bird	45. claw	70. give	95. say
21. dog	46. foot	71. say	96. good
22. louse	47. knee	72. sun	97. new
23. tree	48. hand	73. moon	98. round
24. seed	49. belly	74. star	99. dry
25. leaf	50. neck	75. water	100. name

To apply glottochronology, lists of the most natural, most neutral translations of each of these 100 semantic concepts are assembled and compared in two or more related languages – or at least languages thought to be related. The forms which are phonetically similar in the compared lists receive a check mark (tick) to indicate probable cognates; and, as will be seen below, the date when these languages separated from one another is calculated based on the number of these checked/ticked ‘cognates’ that they share. Some scholars argue that the method should be constrained to require that only forms known from historical linguistic research to be real cognates be counted, rather than mere ‘look-alikes’, as in the more common practice.

(2) *Constant rate of retention through time.* The second assumption is that the *rate of retention* of items of core vocabulary is relatively

constant through time, that a language will retain about 86 per cent of the words of the 100-word list each 1,000 years (the figure is 80.5 per cent, rounded to 81 per cent retention for the 200-word list, formerly used but found not to be sufficiently culture-free and therefore replaced by the 100-word list).

(3) *Constant rate of loss cross-linguistically.* The third assumption is related to the second; it claims that the *rate of loss* of basic vocabulary is approximately the same for all languages. It is assumed that languages everywhere lose about 14 per cent of the 100-word list, that is, that some fourteen words from the 100-word list will be replaced (thus some eighty-six of the basic 100 words will be retained) each 1,000-year period throughout their history.

(4) *Calculation of the date of divergence.* The fourth assumption is that when the number of cognates in the basic vocabulary list shared by related languages is known, the number of centuries since the languages split from an earlier ancestor can be computed. The time depth is computed with the formula

$$t = \frac{\log C}{2 \log r}$$

where t is 'time depth' in millennia (1,000-year periods), C is 'percentage of cognates' and r is 'the constant' (the percentage of cognates assumed to remain after 1,000 years, that is, 86 per cent for the 100-word list). *Log* means 'logarithm of'.

6.5.2 Historical background

Glottochronology was invented in the 1950s by Morris Swadesh, an American linguist, who began by trying to determine whether there were broad trends involving vocabulary change within particular language families. He was surprised to discover, so he reported, that not only were there constant trends within particular language families, but that the rate of change turned out to be the same across languages, regardless of their family affiliations. This claim constitutes one of the basic assumptions of the method, and it has been vigorously criticised (see below). Swadesh began with a basic vocabulary list of 500 words, but this was soon reduced to 205, then to 200, and finally to the 100-word list. In developing glottochronology, he examined thirteen test cases – languages with long attested histories where vocabulary change could be checked against written evidence. In these 'test cases', he compared

modern versions of English, German and Swedish (Germanic languages) with older attested stages of each language (for example, Modern English with Old English). Catalan, French, Italian, Portuguese, Romanian and Spanish (Romance languages) were compared with Latin. Athenian Greek and Cypriot Greek were compared with Classical Greek; Coptic was compared with Middle Egyptian (its ancestor); and modern Mandarin Chinese was compared with Ancient Chinese. However, only two of these thirteen (Coptic and Mandarin) are non-Indo-European languages, and this has raised doubts about the method. From later tests with control cases involving Kannada, Japanese, Arabic, Georgian, Armenian and Sardinian, the claim of a constant rate of retention has been challenged (see below).

6.5.3 Criticisms

6.5.3.1 Problems with the assumption of basic vocabulary

There are serious problems with the assumption of a universal, culture-free basic vocabulary. One is that many of the items are not culture-free, but rather are borrowed for cultural reasons in a number of languages. Examples of borrowed terms for items on the 100-word list are found for each item in some language somewhere; only a few revealing examples are mentioned here. In several Mayan languages, (18) *winaq* 'person' was replaced by a loanword, *kristian* (or something similar), from Spanish *cristiano* 'Christian'. In the early colonial period, Spanish contrasted Christianised Indians (the *cristianos*) with pagans. When ultimately all had been 'pacified' (converted), by default all were then called *kristian* 'person', resulting in the elimination from the vocabulary of former *winaq* 'person'. In the case of (21) 'dog', while native peoples of Central America had dogs before the coming of the Spanish, their dog was small, hairless and barkless, and served as a food item. The big, hairy, noisy dogs which arrived with Europeans were not easily equated with the native dogs, and hence many groups borrowed the foreign name for 'dog' and eventually came no longer to have a native term for 'dog'. Thus, for example, 'dog' in Pipil (Uto-Aztecán) is *pe:lu*, borrowed from Spanish *perro* 'dog' (Pipil has no *r*). The word for (52) 'heart' is widely borrowed in a number of Mayan languages from Totonac (a non-Mayan language of Mexico); this presumably has to do with the importance of 'heart' in native religion (for example, human sacrifice by cutting out the heart was practised). Forms for (72) 'sun' and (73) 'moon' are widely borrowed among many languages of south-east Asia due to their central role in religion and cosmology. Words for

(100) 'name' are also often borrowed. In fact, if we just look at the English glosses among the items of the 100-word list, we see borrowings for (18) 'person' (from French) (28) 'skin' (from Scandinavian), (32) 'egg' (from Scandinavian), (33) 'grease' (from French) and (86) 'mountain' (from French), among others. Borrowing is a serious problem for the assumption that there is a relatively culture-free basic vocabulary.

Another problem is that glottochronology assumes that there will be a direct, one-to-one matching between each numbered notion in the 100-word list and a word of each language. However, this is very often not the case. For many of the items on the list, languages often have more than one neutral equivalent. For example, for (1) 'I', many languages of south-east Asia have several forms all meaning 'I' whose use depends on the relative status of the person spoken to. Similarly, (2) 'you' even more frequently than 'I' has multiple forms, depending on social status and degree of intimacy (for example, the familiar versus polite pronouns, Spanish *tu* and *usted*, German *du* and *Sie*, French *tu* and *vous*, Finnish *sinä* and *te*, K'iche' *at* and *la:l*, to mention just a few), where one form is not more basic than the other. For (3) 'we', many languages have distinct forms for 'inclusive' versus 'exclusive' first person plural pronouns. For (8), some languages have no single form for 'not', but rather have conjugated negative verbs with several forms (compare Finnish *en* 'I don't', *et* 'you don't', *ei* 'he/she/it doesn't', *emme* 'we don't', *ette* 'you [plural] don't', *eivät* 'they don't'). For (9) 'all', some languages have different terms depending on whether the meaning is 'all' = 'each member of a group' or 'all' = 'the entire amount'. Navajo and its close sister languages have no unique word for (75) 'water'; rather, they have several different words for 'stagnant water in a pool', 'rain water', 'drinking water' and so on. Some Slavic languages have no unique word for (80) 'cloud', but rather one word for dark storm clouds (as Russian *tuča*) and a separate word for light clouds (as Russian *oblako*). For (84) 'burn', many languages have more than one equivalent; for example, Spanish *arder* 'burn' (intransitive) and *quemar* 'burn' (transitive), or several K'ichean (Mayan) languages *-k'at* 'burn' (accidental) and *-por* 'burn' (purposeful). For (93) 'hot', several K'ichean languages have two equally common forms which are equivalent: *k'atan* 'hot' (of weather, water, a room and so on) and *meq'en* 'hot' (of food, drinks, fire and so on). The same is true for (94) 'cold': *te:w* 'cold' (of weather, wind, people, ice and so on) and *xoron* 'cold' (of food, water and so on). K'ichean languages often have as many as seven different terms for 'to eat'; for example, *-wa?* 'eat (bread-like things)', *-tix* 'eat (meat)' and *-lo?* 'eat (fruit-like things)' are equally common and none is

more neutral or basic than another. Similar examples can be cited for many of the other words in the list.

Not only do many of the items from the 100-word list have more than one natural, neutral equivalent in many languages, but some have no equivalent at all – or better said, in a number of cases, some languages make no distinction between two separate items on the list. For example, (17) ‘man’ and (18) ‘person’ are homonymous in many languages. Many languages do not distinguish (27) ‘bark’ from (28) ‘skin’ or (36) ‘feather’ from (37) ‘hair’, where ‘bark’ is just ‘tree skin’, and ‘feather’ is just ‘bird hair’. Some Latin American Indian languages do not distinguish (26) ‘root’ from (37) ‘hair’, where ‘root’ is equivalent to ‘tree hair’. More generally, work on colour universals has shown that, while all languages have an equivalent (more or less) for (90) ‘white’ (or light) and (91) ‘black’ (or dark) and most have a term for (87) ‘red’, it is not at all uncommon for languages to lack basic colour terms for (88) ‘green’ and (89) ‘yellow’ (Berlin and Kay 1969).

In instances where a language has more than one equivalent per item on the basic vocabulary list or where the same term covers more than one item on the list, the results can be skewed. For example, two languages will appear less closely related than in fact they are if both have, for example, two equivalents for ‘hot’, but the one meaning ‘hot, of weather’ turns up checked/ticked on one language’s list and the one meaning ‘hot, of food’ gets checked/ticked on a related language’s list. Similarly, if related languages make no distinction between ‘feather’ and ‘hair’, then the same word will turn up twice, as the equivalent to these two separate items in the list, making the languages seem to share more and therefore appear to be more closely related than would be the case if only distinct items were compared. Such skewing is a serious problem for the method.

Some ‘basic vocabulary’ appears to change rather easily for cultural reasons, for example, terms for (38) ‘head’ in various languages. Proto-Indo-European **kaput* ‘head’ gave Proto-Germanic **haubidam*/**haubudam* (hence Old English *hēafod* > *head*) and Proto-Romance **kaput*. However, several Germanic and Romance languages no longer have cognates of these terms as the basic form referring to the human head. For example, German *Kopf* ‘head’ originally meant ‘bowl’; the cognate from **kaput* is *haupt*, which now means basically only ‘main’, ‘chief’, as in *Hauptbahnhof* ‘main/central station’. French *tête* and Italian *testa* both meant originally ‘pot’; the French cognate from Latin **kaput* is *chef*, but this means now ‘main, principal, chief’, not a human head. The Italian cognate *capo* now means ‘top, chief, leader’. Pipil (Uto-Aztecan)

tsuntekumat 'head' comes from *tsun-* 'top, hair (in compound words only)' + *tekumat* 'bottle gourd', and has replaced Proto-Nahua **k^wāyi-* for 'head'. It is a problem for the method that some items on the list seem to be replaced more frequently and more easily than others.

Finally, it has been pointed out that taboo has resulted in the replacement of considerable vocabulary, particularly in some languages in Australia, New Guinea and the Americas, where words similar to the names of recently deceased relatives are avoided and substitutions or circumlocutions are used instead. Some of these result in permanent vocabulary replacement. Other kinds of taboo replacement of items in the basic vocabulary list are also very frequent. For example, in dialects of K'iche' and Tz'utujil (Mayan languages), (20) *ts'ikin* 'bird' has been replaced by *čikop* (originally 'small animal') due to taboo. In Latin American Spanish, *pájaro* 'bird' has come to mean 'male genitals' and is obscene; for that reason, many Spanish speakers avoid it and substitute *pajarito* 'small bird' or something else instead. Because Spanish is the dominant national language where Mayan languages are spoken, speakers of some Mayan languages have transferred the obscene associated with 'bird' in Spanish to the term for 'bird' in their native language and for that reason replaced the vocabulary item. Another example is (32) 'egg'; Spanish *huevo* 'egg' also means 'testicle' and is obscene, and for that reason many in rural Mexico substitute *blanquillo* (literally 'little white thing') for 'egg', replacing *huevo* in this meaning.

Facts such as these show that there is no universal, culture-free vocabulary for which a one-to-one translation equivalent exists in all languages. Still, stubborn proponents of glottochronology would respond to this criticism that something must account for the portion of the vocabulary which is replaced and it may be borrowing, taboo and so on which bring about that loss.

6.5.3.2 Problems with assumptions (2) and (3)

Since the assumption of a constant rate of retention through time and of a constant rate of loss cross-linguistically are related, criticisms of these two assumptions are considered together.

First, a quick check based on common sense would call these assumptions into question. There are good reasons why sound change might be regular, based on what is known about the structure and limitations of human speech-organ physiology and perception; however, there is nothing inherent in the nature of vocabulary (or in the organisation of the lexicon) which would lead us to suspect any sort of regular pattern to lexical change, certainly not that basic vocabulary should be replaced

everywhere at the same rate. The study of additional test cases after Swadesh developed the method shows that this doubt based on intuition about vocabulary change is well founded, that there really is no constant rate of loss or retention across languages or through time. Icelandic has retained 97.3 per cent, English 67.8 per cent, Faeroese over 90 per cent, Georgian and Armenian about 95 per cent each during the time that these languages have had written attestations. The large difference between Icelandic's 97.3 per cent and English's 67.8 per cent lends little confidence to the claim of an expected 86 per cent, regardless of what the range of error (standard deviation) permitted by the statistical calculation may be. That is, these tests show that the rate is neither constant across time nor the same for all languages.

With respect to the claim of a constant loss through time of 14 per cent for each 1,000-year period, written documentation exists for more than one 1,000-year period for extremely few languages; in Swadesh's thirteen test-case languages, attestations for more than one or two 1,000-year chunks of time is available only for the Coptic and Mandarin cases (the interpretation of which is much less secure). Some scholars argue that it is possible that circumstances were so different in the more remote past that vocabulary loss and retention may have behaved differently in earlier 1,000-year chunks of time from later 1,000-year periods. While this is highly unlikely, without written documentation it is not possible to eliminate the possibility entirely, and it will not do just to assert the constant rate far into the past on the basis of no good evidence.

6.5.3.3 Problems in calculating dates of separation

Since the split-ups of language families (or subgroups) are usually not sudden, in principle the notion of attaching a precise date to such gradual diversifications seems overly unrealistic – it is difficult to date a language split. Also, subsequent contact among the sister languages after a split is common; but, as commonly applied, the method makes no effort to distinguish loans that result from such contact from directly inherited cognates. For example, in French and Italian the word for 'head' (Italian *testa*, French *tête* [from earlier *test(a)*]) is similar because French borrowed this form from Italian, which itself had shifted *testa* 'pot' to mean 'head'. That is, in calculating how long ago Italian and French separated from one another, the date is skewed towards a more recent break-up because of this basic vocabulary item which is shared due to contact after they split up.

It is also telling that this basic assumption about being able to calculate the date of separation has been vigorously challenged; or better said, the

statistical model upon which glottochronology is based has been severely criticised, although others defend it or try to refine it. The most generous thing that can be said about the mathematical model upon which it is based is that it is controversial.

6.5.4 Purported uses of glottochronology

The principal use to which glottochronology has been put is that of subgrouping language families. It is sometimes thought that glottochronological calculations of splits provide a fast and easy means for arriving at the internal classification of a language family with no need to undertake the more difficult and time-consuming determination of subgrouping based on shared innovations. However, since glottochronology is unreliable and is discounted by most historical linguists, it should not be thought of as a substitute for the traditional means of subgrouping. It is simply not reliable for this purpose.

On the other hand, some have found glottochronology a useful starting point in beginning to classify large families, such as Austronesian, with a great number of languages (c. 800). Since it would be difficult at the outset to compare all the languages of large families with each other to determine shared innovations among them all, some suggest that a preliminary application of glottochronology can give an idea of the more promising hypotheses which can then later be checked by traditional means. However, it should be recalled that glottochronology used in this way does not find or demonstrate subgrouping relationships, but merely points to directions where other sorts of research may prove fruitful. The other research is still necessary before the groupings can be believed, and such preliminary classifications based on glottochronology may well have to be seriously revised or abandoned.

Some suggest that while the dates offered by glottochronology are not reliable, they nonetheless provide a relative chronology which more or less corresponds with what we know in many actual cases. That is, some scholars who reject glottochronology are still willing to entertain the results as a rough guide to relatively old or relatively young relationships. In the absence of other information which can help to establish linguistic dates, this might seem helpful to some. Still, it must be remembered that many glottochronological dates are known to be inaccurate.

Finally, some have thought that glottochronology might help to establish distant genetic relationships among languages. However, glottochronology cannot find or demonstrate remote relationships; rather, in the application of the method, forms which are phonetically similar

in the languages being compared are checked/ticked as possible cognates and then, based on the number counted, a date is calculated for when the languages split up. That is, the method does not find or test distant genetic relationships, but rather just assumes relationship and proceeds to attach a date. This is illegitimate for research on possible remote linguistic relationships.

Glottochronology has given linguistics a bad reputation with some other prehistorians. For example, many archaeologists were initially very happy to embrace its dates, and they frequently proposed interpretations of the prehistory of different peoples and areas which relied on glottochronological dates and attempted to correlate them with other sources of information on prehistory. However, as archaeologists came to find out about the problems of the method and the unreliability of the dates, some felt deceived and came to believe that linguistics had nothing to offer them. This is unfortunate, for though glottochronology proved misleading, other areas of historical linguistics have an important role to play in the study of prehistory in general (as shown in Chapter 15).

In summary, glottochronology is not accurate; all its basic assumptions have been severely criticised. It should not be accepted; it should be rejected. (For references and discussion, see Campbell 1977: 62–5.) For subgrouping, only shared innovations prove reliable, if the cautions about independently occurring changes and possibly inaccurate reconstructions are kept in mind. The best-defined subgroups are those which are based on a number of shared innovations of the type which are not likely to happen independently or to be diffused across language boundaries.

6.6 Exercises

Exercise 6.1

Return to your reconstruction of Proto-K'ichean in exercise 5.4 and, based on the reconstruction and the sound changes that took place in each language, attempt to subgroup these languages. This is only an exercise and may prove difficult, depending on what you reconstructed and on the number and kind of sound changes you postulated for exercise 5.4; therefore, just do your best here, but do not agonise over it. Discuss any difficulties you encounter.

Exercise 6.2

Return to your reconstruction of Proto-Quechuan in exercise 5.5 and then follow the instructions in exercise 6.1.

Models of Linguistic Change

It is now an axiom of scientific philology that the real life of language is in many respects more clearly seen and better studied in dialects and colloquial forms of speech than in highly developed literary languages.

(Henry Sweet 1900: 79)

7.1 Introduction

When textbooks on historical linguistics talk about ‘models of change’, they invariably mean the traditional ‘family-tree’ model and the ‘wave theory’, and the conflict that is assumed to exist between them. These are described in this chapter and the conflict between them is reconciled. In particular, the contrasting (but actually complementary) approaches taken by dialectologists and traditional Neogrammarians are examined and clarified, sociolinguistic approaches to language change are brought into the picture, and the related notion of ‘lexical diffusion’ is put in perspective.

7.2 The Family-tree Model

The family tree (sometimes called *Stammbaum*, its German name) is the traditional model of language diversification. The family-tree model attempts to show how languages diversify and how language families are classified (as described in Chapter 6). A family-tree diagram’s purpose is to show how languages which belong to the same language family are related to one another. *Linguistic diversification* refers to how a single ancestor language (a proto-language) develops dialects which in time

through the accumulation of changes become distinct languages (sister languages to one another, daughter languages of the proto-language), and how through continued linguistic change these daughter languages can diversify and split up into daughters of their own (members of a subgroup of the family). The family-tree diagram represents this diversification, being a classification of the languages of a family and the degree of relatedness among the various languages.

The family-tree model is often associated with August Schleicher, prominent in the history of Indo-European linguistics and teacher of several founders of Neogrammarianism, as well as of well-known opponents to Neogrammarian thinking (for example, see Schleicher 1861–2). This model is typically linked in the literature with the development of the comparative method and eventually with the Neogrammarian notion of regularity of sound change. At the heart of the conflict over models are two of the basic assumptions of the comparative method (discussed in Chapter 5), that sound change is regular (the Neogrammarian hypothesis) and that there is no subsequent contact among the sister languages after the break-up of the proto-language.

The Neogrammarian slogan, *sound laws suffer no exceptions* (declared virtually as doctrine in the so-called ‘Neogrammarian manifesto’, in the foreword to Hermann Osthoff and Karl Brugmann (1878), written mostly by Brugmann), became an important cornerstone of reconstruction by the comparative method (as explained in Chapter 5). There is nothing inherently hostile to language contact and borrowing in the comparative method or the regularity of sound change; it is just that there is no provision in the comparative method for dealing directly with borrowings. For this, it is necessary to resort to considerations that are not properly part of the comparative method itself (see Chapter 3). Nevertheless, this neglect of language contact in the comparative method is the source of dispute about which models are assumed most appropriate for dealing with kinds of changes and kinds of relationships among languages. Clearly, genetic relationship, the only thing represented in family-tree diagrams, is not the only sort of relationship that exists among languages – for example, languages do also borrow from one another.

7.3 The Challenge from Dialectology and the ‘Wave Theory’

Some scholars, many of them dialectologists, did not accept the Neogrammarian position that sound change is regular and exceptionless, but rather opposed this and the family-tree model. The slogan associated with opponents of the Neogrammarian position is *each word has its own*

history ('chaque mot a son histoire'). (This slogan is often attributed to Jules Gilliéron, author of the *Atlas linguistique de la France* (1902–10), the dialect atlas of France (see Gilliéron 1921; Gilliéron and Roques 1912), although it should be credited to Hugo Schuchardt, a contemporary of the Neogrammarian founders, of whose claims he was critical.) The alternative to the family-tree model which was put forward was the 'wave theory'. The wave theory is usually attributed to Johannes Schmidt (1872), though it, too, was actually developed slightly earlier by Hugo Schuchardt (in 1868 and 1870; this history is documented in Alvar 1967: 82-5) – Schuchardt and Schmidt were both students of Schleicher, as were several of the leading Neogrammarians. The 'wave theory' was intended to deal with changes due to contact among languages and dialects; in the wave model, changes were said to emanate from a centre as waves on a pond do when a stone is thrown into it, where waves from one centre of dispersion (where the stone started the waves) can cross or intersect outward-moving waves coming from other dispersion centres (started by other stones thrown into the water in other locations). Changes due to language contact (borrowing) were seen as analogous to successive waves crossing one another in different patterns. The dialectologists' slogan, that every word has its own history, reflects this thinking – a word's history might be the result of various influences from various directions, and these might be quite different from those involved in another word's history, hence each word has its own (potentially quite different) history. It is easy to see that this model would reduce historical linguistics to etymology, since etymology is the study of the idiosyncratic particular properties in the history of individual words.

The dialectologists believed that their findings contradicted the regularity hypothesis of the Neogrammarians. To see what is meant by this, let us consider a much-cited example: the French dialects of Normandy. Latin *k* became *f* in Standard French (before *a* and front vowels), seemingly a regular sound change. However, in pockets in Normandy, as seen in Map 7.1, a handful of words appear to be exceptions to this change, maintaining *k* (though the majority of words with original *k* in the appropriate phonetic environments did undergo the change to *f* in this area). The exceptional words which retain *k* at least in part of this region are:

chaîne < catēna 'chain'

chambre < camera 'room'

champ < campus 'field'

Chandeleur 'Candlemas (ecclesiastical)' < candēla 'candle'

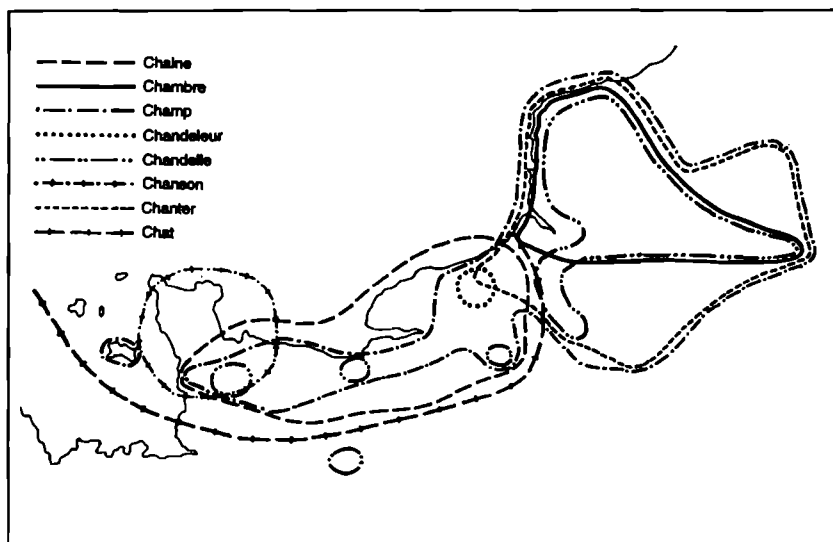
chandelle < candēla 'candle'

chanson < cantiō(n-) 'song'

chanter < cantāre 'to sing'

chat < cattu(s) 'cat'

These are spelled here in Standard French orthography and shown with the Latin roots from which they come. Their geographical distributions at the time when the French dialect atlas was prepared are seen in Map 7.1. (Compare Lepelley 1971: 63, 93, 362; Palmer 1972: 272–3.)



MAP 7.1: Geographical distribution of words which retained /k/ in areas of Normandy (redrawn after Palmer 1972: 273)

Dialectologists took this as evidence that the Neogrammarian idea of exceptionless sound change must be just wrong. A dialectologist might say that each of these words has its own history. For example, 'homey' words characteristic of rural life such as 'cat' and 'field' might more successfully resist the wave of change which brought with it the $k > f$ change which spread outwards from the prestige centre in Paris. On the other hand, words for things like 'candle' and 'to sing', associated with the Church where more prestigious pronunciations were favoured and aided by the Parisian pronunciations of priests assigned to the local parishes, did undergo the $k > f$ change in much of this region, retaining k only in very small pockets. This is seen to explain why the areas where 'candle' and 'to sing' still preserve the k pronunciation are much smaller than those of 'cat' and 'field' with k – the words just had different histories.

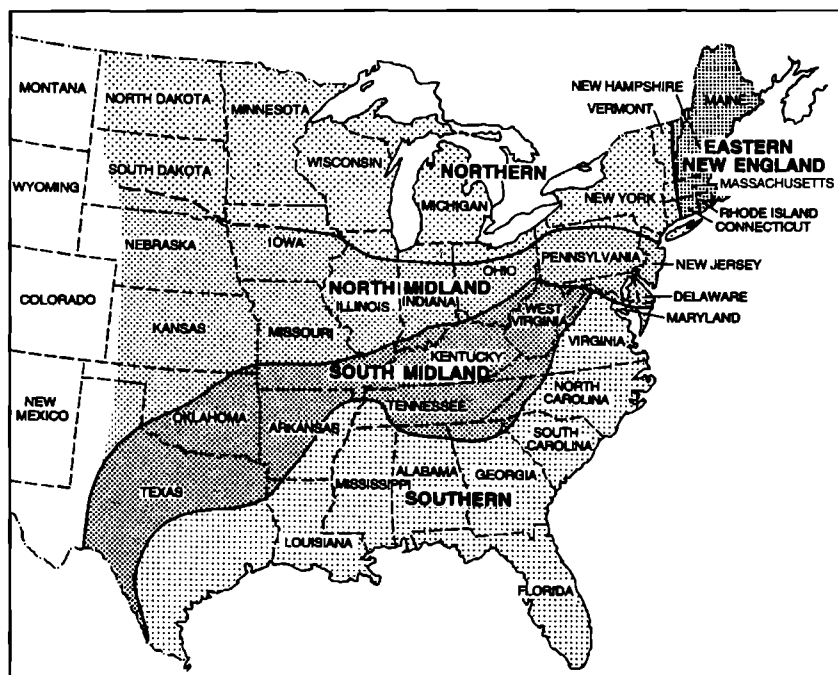
However, there are two important things to notice about this case. First, we can identify these words as exceptions only if we recognise the sound change of $k > f$ – without acknowledging the sound change, it would be impossible to recognise these few words in Normandy as exceptions. While these words are exceptions to strict exceptionlessness of sound change, we cannot explain their individual histories, that they are exceptions, without reference to the sound change. Second, it is possible that a situation like this one can tell us something more about how some sound changes take place – in this case apparently through the spread of the Parisian prestige norm (with f) to more remote areas. This sort of change is sometimes called *dialect borrowing*. Most importantly, this example shows that neither model is sufficient to explain all of linguistic change and all the sorts of relationships that can exist between dialects or related languages. Without accepting the sound change, we would not be able to recognise these dialect forms as exceptions, and without the information from dialectology, our knowledge of how some changes are transmitted would be incomplete. Clearly, both are needed. This being the case, it will pay us to look a bit more closely at some basic aspects of dialectology. Other aspects of the explanation of change are deferred until Chapter 11.

7.4 Dialectology (Linguistic Geography, Dialect Geography)

Dialectology deals with regional variation in a language. Some concepts of dialectology that need to be understood are the following.

Isogloss: a line on a map which represents the geographical boundary (limit) of regional linguistic variants. By extension, the term ‘isogloss’ also refers to the dialect features themselves, an extension of the original sense of the word from dealing with a line on a map to reference to the actual linguistic phenomena themselves. For example, in the USA the *greasy/greazy* isogloss is a line roughly corresponding to the Mason–Dixon line which separates the North Midlands from the South Midlands; it runs across the middle of the country until it dives down across south-eastern Kansas, western Oklahoma and Texas (see Map 7.2). North of the line, *greasy* is pronounced with s ; south of the line it is pronounced with z . Another isogloss has to do with a contrast versus lack of contrast in the vowels in such word pairs as *pin/pen* and *tin/ten*. In these words, [ɪ] and [ɛ] before nasals contrast in other dialects, but in the South Midlands and Southern dialect areas there is no contrast – these vowels have merged before nasals in these dialects. This explains

how country-music songs, many of whose writers and singers are from the dialect areas which lack the contrast, can rhyme words such as *win* and *end*, both phonetically [ɪn] (*end* also loses the final consonant [nd > n]), as in the well-known song, 'Heartaches by the Number', where the last line of the refrain goes: 'I've got heartaches by the number for a love that I can't *win*, but the day that I stop countin' is the day my world will *end*.'



MAP 7.2: Some major dialect areas in the USA

Bundle of isoglosses: several isoglosses whose extent coincides at the same geographical boundary; such bundling of isoglosses is taken to constitute the boundary of a dialect (or dialect area). The two examples of isoglosses just mentioned happen to bundle, both along the Mason–Dixon line (with *greasy* and the *pin/pen* contrast north of the line (for example, in the North Midlands dialect area); with *greazy* and lack of the vowel contrast south of the line (for example, in the South Midlands dialect area) (see Map 7.2).

Focal area: zone of prestige from which innovations spread outwards.

Relic area (residual area): an area (usually small) which preserves older forms that have not undergone the innovations that the surrounding areas have; relic areas are often regions of difficult access for cultural,

political or geographical reasons, and thus resistant to the spread of prestige variants from elsewhere. The area of Normandy which retained *k* in certain words shown in Map 7.1 is a relic area.

Lect: some scholars feel the need for a more open-ended term which signifies any linguistic variety, whether defined by its geographical distribution or by its use by people from different social classes, castes, ages, genders and so on. *Lect* is intended to cover all such varieties (geographical dialect, sociolect, idiolect – the language characteristic of a single individual and so on).

Mutual intelligibility: when speakers of different linguistic entities can understand one another. This is the principal criterion for distinguishing dialects of a single language from distinct languages (which may or may not be closely related). Entities which are totally incomprehensible to speakers of other entities clearly are mutually unintelligible, and for linguists they therefore belong to separate languages. However, the criterion of mutual intelligibility is often not so straightforward. For example, there are cases of non-reciprocal intelligibility (for instance, Portuguese speakers understand Spanish reasonably well, while many Spanish speakers do not understand Portuguese well at all) and of non-immediate intelligibility, where upon first exposure understanding is limited, but after a time intelligibility grows. There are many studies in the sociolinguistic and dialectological literature of cases of various sorts having to do with how to determine to which language various dialects belong, often having to do with the relationship of regional varieties to some standard or *superordinate* language or to their position within a dialect chain. We do not have the space to get into the details of this here, though these various relationships among varieties are relevant to linguistic change.

Language: the definition of 'language' is not strictly a linguistic enterprise, but sometimes is determined more by political or social factors. For this reason, Max Weinreich's definition of language is very frequently reported: *a language is a dialect which has an army and a navy*. This emphasises that the definition of a 'language' is not merely a linguistic matter. For example, while speakers of Norwegian and Swedish have little difficulty understanding one another (the languages are mutually intelligible), these are considered separate languages for political reasons. On the other hand, Chinese has several so-called 'dialects' which are so different one from another that their speakers do not easily understand each other's language. By the criterion of mutual intelligibility, linguists would consider these separate languages; however, official policy in China regards these as representing the same language.

Although the literature on the history of linguistics often disposes us

to think that dialectology played an important role in the making of the wave theory, giving us the slogan 'every word has its own history', in fact the study of dialects also significantly influenced the Neogrammarians and the origin of their slogan, that 'sound laws suffer no exceptions'. The Neogrammarian founders were impressed by Winteler's (1876) study of the Kerenzen dialect of Swiss German, in which he presented phonological statements as processes (following the ancient rules for Sanskrit of Pāṇini, an important Hindu grammarian from around the fifth century BC, which Winteler studied in his linguistic training). This 'regularity' which Winteler saw in the dialect's (synchronic) rules – for example, in Kerenzen every *n* became *ŋ* before *k* and *g* – inspired the Neogrammarian founders to have confidence in the exceptionlessness of sound changes (Weinreich et al. 1968: 115). Of course, as we saw, Gilliéron (1921), who opposed regularity, also based his objections on the study of dialects, arguing against the Neogrammarians with the other slogan, 'every word has its own history'. Ironically, both these famous orientations to historical linguistics were influenced significantly by dialect studies.

The conflict between the Neogrammarians' 'exceptionless sound change' and the dialectologists' 'every word has its own history' is implicated in more recent controversies over how sound change is transmitted. This controversy will be considered presently, but first it will be helpful to have in mind the general framework which has most influenced thinking in this area, that of Weinreich, Labov and Herzog (1968).

7.5 A Framework for Investigating the Causes of Linguistic Change

The framework presented by Weinreich et al. (1968) has been very influential in historical linguistic thought concerning 'why' and 'how' linguistic changes take place. They asked a number of questions, which they also called 'problems', which must be answered (or 'solved') by any theory which hopes to explain language change. These are:

(1) *The constraints problem*: what are the general constraints on change that determine possible and impossible changes and directions of change? For example, among the constraints on change, Weinreich et al. (1968: 100) postulate that 'no language will assume a form in violation of such formal principles as are . . . universal in human languages'. The constraints problem is a central issue in linguistic change for many scholars; it takes the form of a search for the kinds of linguistic

change that will *not* take place. The irreversibility of mergers (see Chapter 2) is a good example of such a constraint.

(2) *The transition problem*: how (or by what route or routes) does language change? What intermediate stages or processes does a language go through to get from a state before the change began to the state after the change has taken place? For example, a much-debated question is whether certain kinds of changes must be seen as gradual or abrupt.

(3) *The embedding problem*: how is a given language change embedded in the surrounding system of linguistic and social relations? How does the greater environment in which the change takes place influence the change? That is, the parts of a language are tightly interwoven, often in complex interlocking relationships, so that a change in one part of the grammar may impact on (or be constrained by) other parts of the grammar (see Chapter 11). Also, language change takes place in a social environment, where differences in language may be given positive or negative sociolinguistic status, and this sociolinguistic environment plays a very important role in change.

(4) *The evaluation problem*: how do speakers of the language (members of a speech community) evaluate a given change, and what is the effect of their evaluation on the change? What are the effects of the change on the language's overall structure? (How does the system change without damage to its function of serving communication?)

(5) *The actuation problem*: why does a given linguistic change occur at the particular time and place that it does? How do changes begin and proceed? What starts a change and what carries it along? The actuation question is the most central, since the other questions relate to it; and if we succeed in answering it, we will be able to explain linguistic change (see Chapter 11).

7.6 Sociolinguistics and Language Change

Changes often begin with variation, with alternative ways of saying the same thing entering the language. Variation is the specific subject matter of sociolinguistics, and while sociolinguists are interested in many other things in addition to linguistic change, sociolinguistics is extremely relevant to understanding how and why languages change. Sociolinguistic concerns underlie several of the questions in Weinreich et al.'s framework (just considered). Sociolinguistics deals with systematic co-variation of linguistic structure with social structure, especially with the variation in language which is conditioned by social differences. The most important dimensions which can condition variation have to do with social

attributes of the sender (speaker), the receiver (hearer) and the setting (context). Variation in a language can be conditioned by such social characteristics of the speaker as age, sex, social status, ethnic identity, religion, occupation, self-identification with a location, and in fact almost any important social trait. Let's consider just a couple of examples of some of these to get a flavour of what is involved. Grammars of Classical Nahuatl report that where Aztec men pronounced *w*, women spoke the same words with *v*. This is linguistic variation conditioned by the sex of the speaker. Since Proto-Uto-Aztecan had **w* in these words, it is necessary to conclude that the *w/v* variation in Classical Nahuatl is due to a linguistic change which women adopted, **w > v*, but men did not. An example reflecting the social status of the speaker is the variation in the Hindi of Khalapur village in India, where the language of high-caste speakers contrasts /*u*/ and /*ə*/, but low-caste speakers have only /*ə*/ both in the words with /*u*/ and those with /*ə*/ of the higher castes. Here, it appears that there has been a sound change in which *u* and *ə* have merged with *ə* (*u, ə > ə*) in the language of the low-caste speakers, affecting the language of only a portion of the population, leading to the variation in speech characteristic of the different castes. Similar examples could be presented for the various other social attributes of speakers. Similarly, social attributes of hearers can condition linguistic variation. This sort of variation is often indicative of changes in progress in a speech community, and this makes the study of such variation and its implications for understanding linguistic change in general extremely important.

Sociolinguistic investigations of change have been of two types: *apparent-time* and *real-time* studies. In apparent-time research, by far the more common, a *variable* (a linguistic trait subject to social or stylistic variation) is investigated at one particular point in time. To the extent that the variation correlates with age, it is assumed that a change in progress is under way and that the variant most characteristic of older speakers' speech represents the earlier stage and the variant more typical of younger speakers' speech shows what it is changing to. The age-gradient distribution shows the change in progress. An example of this sort is the ongoing merger of diphthongs /*iə*/ (as in *ear, cheer*) and /*ɛə*/ (as in *air, chair*) in New Zealand English, where in general older speakers maintain the contrast more, but increasingly younger speakers merge the two to /*iə*/, hence jokes based on the homophony of 'beer' and 'bear', for example (see MacLagan and Gordon 1996). Real-time studies compare samples of language from different times; for example, a comparison of recordings from fifty years ago with comparable samples

of speech today can reveal changes (see Labov 1994 for discussion of several examples).

Some general claims about linguistic change which have been made based on large-scale sociolinguistic investigations in urban settings are:

1. Linguistic changes originate in the intermediate social classes (the upper working class or lower middle class), not the highest or the lowest classes.
2. The innovators of change are usually people with the highest local status, who play a central role in the speech community.
3. These innovators have the highest density of social interactions within their communication networks and they have the highest proportions of contacts outside the local neighbourhood, as well.
4. Women lead most linguistic changes (women accept and help to propagate the linguistic changes earlier than men do).
5. Different ethnic groups who newly enter a speech community participate in changes in progress only to the extent that they begin to gain local rights and privileges in jobs and housing, and access to or acceptance in the society. (See Labov 1994.)

Several of these claims are currently being challenged or refined – for example, there is a range of opinion concerning whether (3) holds up, even in the urban settings for which it is designed. Some of these claims may be appropriate only to modern settings; it is important to determine to what extent these and other claims may be true of changes which take place in languages spoken in societies and social settings with very different social organisations, subsistence patterns and economic practices, less nucleated settlements, and so on.

A number of influential historical linguists (for example, Henning Andersen, Eugenio Coseriu, James Milroy) hold that speakers change, and not languages, making all linguistic change social change, rather than language change *per se*. Some go so far as to deny any language-internal motivation (arising from the structural aspects of the language itself) for language change, but most historical linguists disagree with this, since there is strong evidence that the explanation of some aspects of linguistic change requires appeal to non-social factors. For example, how could the approach which views linguistic change as merely a kind of social change explain why certain changes (for example, intervocalic voicing of stops) recur in language after language, despite the vastly different social settings in which these different languages are used? The explanation of linguistic change is not found solely (but in fact only very rarely) in conscious change by speakers for social purposes.

Internal factors are also important; both internal and external factors are important (see Chapter 11).

Different conceptions of linguistic change are often closely linked with the stand taken on the *actuation problem* (mentioned above). For example, James Milroy (1992: 10) stresses network theory's emphasis on language *maintenance*: 'In order to account for differential patterns of change at particular times and places [that is, to solve the actuation problem], we need first to take account of those factors that tend to maintain language states and resist change'. Strong network ties are seen as norm-enforcement mechanisms, a model for maintenance of local language norms against encroaching change from outside the network. How can the actuation problem, the question about how changes get started in the first place, be approached with a model based solely on norm maintenance, that is on resistance to change but not on change itself? In Milroy's view, linguistic change takes place in strong-tie networks only to the extent that they fail at their primary mission of maintaining the network norms and resisting change from outside. If the social network can only resist but not initiate change, with all change entering from without, how could network theory contribute to solving the actuation problem? The origins of these changes in the broader community from where they flow into the strong-tie networks appear to be more relevant to the actuation problem and generally to understanding how and why languages change.

7.7 The Issue of Lexical Diffusion

For the Neogrammarians, the three primary mechanisms of change were regular sound change, analogy and borrowing. Regularity for them meant that every instance of a sound changes mechanically, irrespective of particular words in which it is found, that is, that it affects every word in which the sound occurs in the same phonetic environment. Cases where a change does not affect all words in the same way at the same time were not seen to be the result of regular sound change, but as due to analogy or to dialect borrowing, as in the case of the variable result of the **k > ʃ* change in different words in Normandy (see above, Map 7.1) due to the differential impact of dialect borrowing from the Parisian prestige variety. This, in essence, constitutes an attempt to answer the transition question, of how change is implemented. The concept of *lexical diffusion*, used primarily by William Wang and his associates (Wang 1969; see Labov 1994: 421–543 for an extensive survey and evaluation), challenges Neogrammarian regularity. They see sound change as being

implemented not by mechanically affecting every instance of a sound regardless of the particular words in which instances of the sound are found (as in the Neogrammarian position), but rather as change affecting the sound in certain words and then diffusing gradually to other words in the lexicon. Fully regular sound changes, in this view, are those in which the change diffuses across the lexicon until it reaches all words. This is like 'dialect borrowing', but with some words borrowing from others in the same dialect. It constitutes a different outlook on the transition problem. It should be kept in mind, however, that in spite of strong claims that lexical diffusion is a more basic mechanism by which change is transmitted than Neogrammarian regularity, very few cases of lexical diffusion have actually been reported, and most of these are doubtful.

While several cases have been analysed as lexical diffusion, most mainstream historical linguists have not been convinced. They see these cases as being better explained as the results of dialect borrowing, analogy and erroneous analysis. On closer scrutiny, most of these cases prove not to be real instances of lexical diffusion but to be more reliably explained by other means. Often it turns out that the phonetic conditioning environments are quite complex – important phonetic environments were missed in several of the cases for which lexical diffusion was claimed. Detailed studies of the same cases by people aware of the claims for lexical diffusion have found sounds behaving regularly in change in these environments and no evidence of lexical conditioning. When the environments are understood, Neogrammarian regularity is what was behind the changes and not lexical diffusion after all. In the examples from the history of Chinese, which had been influential support for lexical diffusion, it turns out that the extent of borrowing from literary Chinese into the varieties of Chinese studied was vastly more extensive than originally thought. That is, like the Normandy case (in Map 7.1), they amounted to just dialect borrowing, which proponents of lexical diffusion later called 'intimate borrowing'; these cases were a misreading of the influence of stylistic choices, language contact and sociolinguistic conditions in general. (See Labov 1994: 444–71.)

With this background, consider again the irregularities so commonly pointed out in the dialect atlases of various languages and the assumed hostility of dialect atlas data to the Neogrammarian regularity hypothesis. The collectors of the data did not take into account the fact that commonly the data collected from local dialects was the result of long interaction between local dialect forms and the dominant prestige or standard language, as in the case of the French forms recorded in

Normandy. These atlas forms did not come to us recorded with tags identifying which words represent an uninterrupted inheritance from an original form versus which were replaced due to influence from an external source. Also, the methods involved in collecting the data for the atlases were not sufficiently sensitive to different styles and socially conditioned variation and were not geared to looking for complex phonetic conditioning environments. It is little wonder, then, that with dialect atlas evidence alone we seem to see support for the slogan 'each word has its own history'; but with more detailed information on social interaction of different varieties/dialects and on phonetic conditioning factors, we find the Neogrammarian regularity more firmly supported. The irregularities seem to develop not internally to a system, but through interaction or interference among systems (Labov 1994: 474). The Neogrammarians with their 'dialect borrowing' account were right all along! In fact, evidence of regular, phonetically conditioned sound change (and not lexical diffusion) in dialect geography turns out to be strong in the cases which have been investigated in detail (Labov 1994: 501).

Labov has attempted to reconcile the mostly regular changes with the few which seem to involve sound changes which affect some lexical items but not others. He notes that 'earlier stages of change are quite immune to such irregular lexical reactions [as implied in lexical diffusion]; and even in a late stage, the unreflecting use of the vernacular preserves that regularity' (Labov 1994: 453). This he calls 'change from below', below the level of awareness. Only in later stages of a change do speakers become aware of the change and give it sociolinguistic value (positive or negative), and this often involves the social importance of words. Change of this sort is what Labov calls 'change from above'. For him, lexical diffusion can involve only the later stages and change from above, the same changes which are often characterised by dialect mixture and analogical change, by a higher degree of social awareness or of borrowing from another system (Labov 1994: 542–3).

In summary, sound change is regular within its own system, though dialect borrowing and various influences from outside the system can result in changes which are less like regular exceptionless sound change. Consequently, to explain change we need both 'sound laws suffer no exceptions' and 'every word has its own history' – they address different things, both of which are important for the full picture of linguistic change.

Some of the topics of this chapter are considered further in relation to the explanation of linguistic change, treated in Chapter 11.

Internal Reconstruction

Language is the armoury of the human mind, and at once contains the trophies of its past and the weapons of its future conquests.

(Samuel Taylor Coleridge)

8.1 Introduction

Internal reconstruction is like the comparative method applied to a single language. It is a technique for inferring aspects of the history of a language from what we see in that language alone. Lying behind internal reconstruction is the fact that when a language undergoes changes, traces of the changes are often left behind in the language's structure, as allomorphic variants or irregularities of some sort. The things that are compared in internal reconstruction, which correspond to the cognates of the comparative method, are the forms in the language which have more than one phonological shape in different circumstances, that is, the different allomorphs of a given morpheme, such as those found in alternations in paradigms, derivations, stylistic variants and the like. Internal reconstruction is frequently applied in the following situations where it can recover valuable information: (1) to isolates (languages without known relatives); (2) to reconstructed proto-languages; and (3) to individual languages to arrive at an earlier stage to which the comparative method can then be applied to compare this with related languages in the family. In this chapter, we will learn how to apply internal reconstruction, and we will take its uses and limitations into account.

8.2 Internal Reconstruction Illustrated

Lying behind internal reconstruction is the assumption that the variants (allomorphs) of a morpheme are not all original, but that at some time

in the past each morpheme had but one form (shape) and that the variants known today have come about as the result of changes that the language has undergone in its past. We internally reconstruct by postulating an earlier single form together with the changes – usually conditioned sound changes – which we believe to have produced the various shapes of the morpheme that we recognise in its alternants. The language reconstructed by internal reconstruction bears the prefix *pre-* (as opposed to the *proto-* of comparative-method reconstructions). For example, we would call the results of an internal reconstruction of English *Pre-English*. (Note, though, that *pre-* is sometimes used in historical linguistics where it has nothing to do with internal reconstruction; for example, it is possible to read about the ‘Pre-Greeks’ where what is intended is the Greeks before they appear in recorded history, or about ‘Pre-English’ which is not reconstructed but refers to a stage of English assumed to have existed before the earliest Old English texts but after the break-up of West Germanic.)

The steps followed in internal reconstruction, broadly speaking, consist of the following:

Step 1: Identify alternations, that is, forms which have more than one phonological shape (different allomorphs) in paradigms, derivations, different styles and so on.

Step 2: Postulate a single, non-alternating original form.

Step 3: Postulate the changes (usually conditioned sound changes) which must have taken place to produce the alternating forms. (Where relevant, determine the relative chronology – the sequence in which these changes took place.) As in the comparative method, we use all the information at our disposal concerning directionality of change and how natural or likely (or unexpected and unlikely) the changes we postulate are in order to evaluate the reconstruction and the changes we propose.

Step 4: Check the results to make certain that the changes we postulated do not imply changes for other forms that they do not in fact undergo; that is, we must guard against proposing changes which might seem to work for certain morphemes but which, if allowed to take place, would produce non-existent forms of other morphemes. We must also check to make certain that the postulated reconstructions are typologically plausible and do not imply things that are impossible or highly unlikely in human languages.

In actual practice, these steps are typically applied almost simultaneously and with little attempt to distinguish one step from the other. The

best way to gain an understanding of internal reconstruction is through examples of its application, and several follow.

8.2.1 First example

Let us begin with a rather easy example from Tojolabal (Mayan). Compare the following words and notice the variants for the morpheme that means 'I':

(1) <i>h</i> -man	I buy	man	to buy
(2) <i>h</i> -lap	I dress	lap	to dress
(3) <i>h</i> -k'an	I want	k'an	to want
(4) <i>k</i> -il	I see	il	to see
(5) <i>k</i> -u?	I drink	u?	to drink
(6) <i>k</i> -al	I say	al	to say

In step 1, we identify *h*- and *k*- as alternants of the morpheme meaning 'I'; *h*- is the variant which occurs before consonants, and *k*- is the form which appears before vowels. In step 2, we attempt to postulate the original form of the morpheme for 'I' in Pre-Tojolabal. Three hypotheses suggest themselves: (1) **h*- (which would presuppose a change to *k*- before vowels to derive the other form of the morpheme, the *k*- allo-morph); (2) **k*- (with a change **k* > *h*- before consonants to account for the *h*- variant); or (3) possibly some third thing (which would change into *h*- before consonants and into *k*- before vowels). The third alternative would require two independent changes (and thus go against the criterion of economy, discussed in Chapter 5), whereas hypotheses (1) and (2) would each need only one change; therefore we abandon (3) under the assumption that it is less likely that two independent changes took place than it is that only one did. There is no particular phonetic motivation for *h*- to change into *k*- before vowels, as presupposed by hypothesis (1) (and if we had more data, we would see that there are plenty of words with initial *h*- before a vowel). However, a change of *k*- to *h*- before consonants is not phonetically unusual, a dissimilation encountered in other languages (and if we had more data, we would see there are no consonant clusters in Tojolabal with initial *k*-; the general directionality of *k* > *h* and not *h* > *k* was seen in Chapter 5). Therefore, we assume that hypothesis (2) with **k*- is more plausible. In step 3, we postulate that the **k*- which we reconstruct for 'I' in Pre-Tojolabal undergoes the change **k*- to *h*- before consonants and that this accounts for the *h*- variant of this morpheme. So, for example, we would reconstruct **k*-*man* 'I buy', and then the change of **k*- to *h*- before consonants

would give modern *h-man*; for 'I see', however, we reconstruct **k-il*, and since this *k-* 'I' is before a vowel, it does not change, leaving modern Tojolabal with *k-il*.

8.2.2 Second example

In Nahuatl (Uto-Aztec), a large number of morphemes have two variant shapes, one with an initial *i* and one without, of the sort illustrated in 'foot', with its two allomorphs, *ikfi* when without prefixes and *-kfi* when it occurs with prefixes (as in *ikfi* 'foot', but *no-kfi* 'my foot'). In internal reconstruction, we must reconstruct a single form as original and attempt to account for the variants which occur by postulating changes which will derive them from the single reconstructed form. In this case, the two most likely choices are: (1) to reconstruct **ikfi* with some rule to delete the initial *i* in order to provide for the *-kfi* variant, as in *no-kfi* 'my foot'; (2) to reconstruct **kfi* and posit some rule to insert the initial *i* in appropriate contexts to give *ikfi*. Since in Nahuatl there are numerous forms with initial *i* which do not lose this vowel with prefixes (for example, *n-ihiti* 'my stomach' – the change of *no-* to *n-* before vowels is a general trait of the language and has no bearing on the vowel of the root), it turns out to be impossible to write a rule which assumes the *i* of *ikfi* was originally present but got lost due to the prefix (**no-ikfi* > *no-kfi* 'my foot'). This would wrongly predict that the non-alternating forms such as *ihiti* should also lose their initial *i* (*no-ihiti* > *no-hti*), but this does not happen (there is no **no-hti* 'my stomach'; rather, the initial *i* is preserved in the form with the possessive prefix). (The notation *✕* is used for 'non-occurring', 'erroneous' or 'ungrammatical' forms; in synchronic linguistics an asterisk (*) is used to signal these, but to distinguish these from reconstructed forms, which are also signalled with an asterisk, we use *✕*.) The second hypothesis, however, encounters no such problem. We get the right results if we assume that the initial *i* was not originally present in the morpheme for 'foot' and reconstruct the words **kfi* 'foot' and **no-kfi* 'my foot', with *i* added to the first later by a rule of initial epenthesis, **kfi* > *ikfi* 'foot'. In looking at the phonological pattern of the language, we find that there are no initial consonant clusters and we therefore assume that a change added *i* to the beginning of words which formerly began in a consonant cluster:

Epenthesis rule: $\emptyset > i / \# __\text{CC}$

Thus we reconstruct the forms and apply the epenthesis rule to produce the modern forms as shown in Table 8.1.

Internal Reconstruction

TABLE 8.1: Internal reconstruction and derivation of Nahuatl roots with initial *i*

	<i>'foot'</i>	<i>'my foot'</i>	<i>'stomach'</i>	<i>'my stomach'</i>
Pre-Nahuatl:	*kfi	*no-kfi	*ihtī	*no-ihtī
Epenthesis:	ikfi	—	—	—
(<i>no-</i> > <i>n-</i> before V)	—	—	—	n-ihtī
Modern Nahuatl:	ikfi	no-kfi	ihtī	n-ihtī

8.2.3 Third example

The internal reconstruction of words containing velar nasals in English involves a somewhat more complicated example. In many words with a velar nasal, English has two variant forms (allomorphs), for example:

lɒŋ/lɒŋg-: lɒŋ 'long' lɒŋg-ər 'longer', lɒŋg-əst 'longest'
 strɒŋ/strɒŋg-: strɒŋ 'strong' strɒŋg-ər 'stronger', strɒŋg-əst 'strongest'.

Given that in internal reconstruction we must choose one form as older and derive the other forms by rule, in this case our most likely choices for the original forms would be: (1) the forms ending in the velar nasal (*lɒŋ*, *strɒŋ*); (2) the forms ending with the velar stop (*lɒŋg*, *strɒŋg*); or (3) some third form from which both the occurring variants can most naturally be derived. Except for morphemes with final *ŋ*, most other velar nasals (*ŋ*) in English are found only before velar stops (*k* and *g*), as in [sɪŋk] 'sink', [fɪŋgər] 'finger' and so on. These instances of *ŋ* in English are the result of a rule which assimilates nasals to the point of articulation of following stops; for example, the *n* of *in-* 'not' assimilates to *m* before labials as in *im-possible*, to *n* before alveolars as shown by *in-tolerant*, and to *ŋ* before velars in many persons' pronunciation of *iŋ-competent*. Regardless of how we may account for the alternating cases (such as *lɒŋ/lɒŋg*), English requires an assimilation rule which produces velar nasals before velar stops; the relevant portion this rule for velars can be represented as in Rule (1):

Rule (1) (Nasal assimilation): $n > \eta / __k, g$

This fact of English suggests that perhaps 'long' and 'strong' formerly ended in *g* and that their *ŋ* may also have resulted from this nasal assimilation rule, and that later, after the assimilation to *ŋ* had taken place, the final *g* of these morphemes was lost; this can be represented as in Rule 2:

Rule (2) (Loss of final *g*): $g > \emptyset / \eta __ \#$

For reconstructing the original form for the morphemes with alternants, if we assume that the variants with final *g* (*lɔŋg-*, *strɔŋg-*) are closer to the original, it is easy to state when the final *g* is lost (namely, after the velar nasal, as in Rule (2)). However, if we attempt to reconstruct the alternative with no final *g* (*lɔŋ*, *strɔŋ*) as original, we would no longer be able to account for all velar nasals as the straightforward result of Rule (1), nasal assimilation, and we would require some ad hoc rule to add *g* to the forms such as *lɔŋg-ər* and *strɔŋg-ə st*, and so on. Therefore, for this case, we reconstruct **lɔŋg* and **strɔŋg* and postulate the two changes, Rules (1) and (2) in that sequence, to derive modern English. By this internal reconstruction, Pre-English would have the reconstructed words and historical derivation (sequence of changes) of Table 8.2 to give the present-day English alternating forms.

TABLE 8.2: Internal reconstruction and derivation of 'long' and 'strong'

Pre-English	<i>*lɔŋg</i>	<i>*lɔŋg-ər</i>	<i>*strɔŋg</i>	<i>*strɔŋg-ər</i>
Rule (1) (Nasal assimilation):	<i>lɔŋg</i>	<i>lɔŋgər</i>	<i>strɔŋg</i>	<i>strɔŋgər</i>
Rule (2) (Loss of final <i>g</i>):	<i>lɔŋ</i>	—	<i>strɔŋ</i>	—
Modern English:	<i>lɔŋ</i>	<i>lɔŋgər</i>	<i>strɔŋ</i>	<i>strɔŋgər</i>

The two changes represented in Rules (1) and (2) took place in this sequence (relative chronology, see below): first the change in Rule (1) occurred (producing *ŋ* before velars), and then at some later time the change in Rule (2) occurred (deleting final *g* after *ŋ*). It is not possible to assume that the two changes could have taken place in the reverse chronological order, first Rule (2) and later Rule (1), since this would give the wrong results, as illustrated in the hypothetical but inaccurate derivation shown in Table 8.3. That is, if the final *g* were lost first (in Rule (2)), there would be no *g* left to condition the assimilation of final *n* to *ŋ* (in Rule (1)), resulting in the wrong forms, **lɔn* and **strɔn*.

TABLE 8.3: Hypothetical but inaccurate reconstruction and derivations of 'long' and 'strong'

Pre-English	<i>*lɔŋg</i>	<i>*lɔŋg-ər</i>	<i>*strɔŋg</i>	<i>*strɔŋg-ər</i>
Rule (2) (Loss of final <i>g</i>):	<i>lɔŋ</i>	—	<i>strɔŋ</i>	—
Rule (1) (Nasal assimilation):	—	<i>lɔŋgər</i>	—	<i>strɔŋgər</i>
Result:	<i>*lɔn</i>	<i>lɔŋgər</i>	<i>*strɔn</i>	<i>strɔŋgər</i>

For those familiar with traditional generative phonology, internal reconstruction is very similar to the process of **setting up** underlying forms.

8.3 Relative Chronology

In the example of English velar nasals, we dealt with a reconstruction which requires attention to the sequence (or order) in which two changes took place, nasal assimilation before loss of final -g. The identification of the sequence (temporal order) of different changes in a language is called *relative chronology* (seen also in Chapters 2, 3 and 5). When more than one change is involved in the reconstruction, sometimes they can each affect a form, and in such situations it may be necessary to figure out which change or changes took place earlier and which later. There is no hard-and-fast procedure for working out the relative chronology of the changes. However, the criterion of *predictability* is the most useful – determining a chronological sequence of changes which, when applied in order to the words of that language, does not produce any non-occurring forms. This is illustrated in the next example.

8.3.1 Fourth example: Spanish

Consider the Spanish forms in Table 8.4. There are two patterns of alternations (variant forms) in these data. There appear to be two different

TABLE 8.4: Spanish internal reconstruction

<i>Set (1)</i>			
doy	'I give'	dar	'to give'
soy	'I am (permanent)'	ser	'to be'
voy	'I go'	ir	'to go' (irregular)
estoy	'I am (temporary)'	estar	'to be'
<i>Set (2)</i>			
ando	'I walk'	andar	'to walk'
peso	'I weigh'	pesar	'to weigh'
lavo	'I wash'	lavar	'to wash'
presto	'I loan'	prestar	'to loan'
<i>Set (3)</i>			
escribo	'I write'	estabilidad	'stability'
inscribo	'I inscribe'	inestabilidad	'instability'
transcribo	'I transcribe'		

allomorphs for 'I' (actually 'first person singular present indicative'): -o in the forms of Set (2) and Set (3), and -oy in the forms of Set (1) (where *y* represents [j]). There also appear to be two variants (allomorphs) of

the forms in set (3), those with initial *e* (as in the case of *escribir*) and those lacking this *e* (as with *-scribo* in the words *inscribo* and *transcribo*). Except for *estoy*, it would appear that the *-oy* allomorph for 'I' is found with monosyllabic verbs (*doy, soy, voy*), while the *-o* allomorph occurs with polysyllabic ones (*ando, peso, lavo, presto, inscribo*). There are only a few verbs in Spanish which take the *-oy* variant (all the monosyllabic ones), but hundreds with *-o*. We would be tempted to propose a reconstruction with **-o* as the original form of this 'I' morpheme and assume that the *-y* was added to this in a later change, as in Rule (1):

Rule (1) (*y*-insertion): $\emptyset > y/o_ \#$ in monosyllabic verbs.

Viewed this way, we would reconstruct, for example, **do* 'I give', and then the change in Rule (1) would turn this into *doy*, the form in modern Spanish. Unfortunately, this solution is not available for *estoy* 'I am', since it is not monosyllabic and therefore does not fit the requirements of Rule (1); that is, in this hypothesis, **esto* 'I am' is expected (parallel to *presto* 'I loan'), not the *estoy* which actually occurs. However, reconstruction of the forms in Set (3) has a bearing on this *estoy* problem. In a search of Spanish words, we would find that only morphemes which begin with *sC* (*s* + some consonant) can have the two variants, one with *e* word-initially (as in *escribo* and *estabilidad*) and another without *e* when the morpheme is preceded by a prefix (as in *in-scribo*). Since there are no instances of *#sC* (an initial consonant cluster which begins with *s*), we assume that the original forms lacked the *e*; we reconstruct **scribo* and **stabilidad*, and we posit a sound change which added *e* to these initial consonant clusters with *#sC*, as in Rule (2):

Rule (2) (*e*-epenthesis): $\emptyset > e/\#_ sC$

Rule (2) applies also to *estoy*, where the initial *e* is not original, but was added later by the epenthesis change. With Rule (1) and Rule (2) in the right sequence – Rule (1) as the first change, followed later by the change in Rule (2) – we can account for the *-y* of *estoy*, which otherwise appears to be an exception to the monosyllabic restriction of Rule (1), illustrated in Table 8.5.

TABLE 8.5: Derivation showing Spanish relative chronology

	'I give'	'I loan'	'I write'	'I inscribe'	'I am'
Pre-Spanish:	*do	*presto	*scribo	*in-scribo	*sto
Rule (1) (<i>y</i> -insertion):	doy	—	—	—	stoy
Rule (2) (<i>e</i> -epenthesis):	—	—	escribo	—	estoy
Spanish:	doy	presto	escribo	inscribo	estoy

Notice, however, that if we were to imagine that perhaps the changes took place in the reverse order, we would get the wrong results, as in the hypothetical historical derivation seen in Table 8.6. That is, in this hypothetical application of the changes in reverse order (in step 4), we end up with the erroneous **esto* 'I am', since the *y*-insertion of Rule (1) takes place only in monosyllabic forms. If Rule (2) were to take place first, epenthesising an *e* and thus giving *esto*, Rule (1) could not apply to this form, because the form would no longer be monosyllabic.

TABLE 8.6: Hypothetical derivation of Spanish with the wrong relative chronology

	<i>'I am'</i>	<i>'I give'</i>	<i>'I loan'</i>	<i>'I write'</i>	<i>'I inscribe'</i>
Pre-Spanish:	*sto	*do	*presto	*scribo	*in-scribo
Rule (2) (<i>e</i> -epenthesis):	esto	—	—	escribo	—
Rule (1) (<i>y</i> -insertion):	—	doy	—	—	—
Spanish:	<i>*esto</i>	doy	presto	escribo	inscribo

In the Spanish example, then, we conclude that the relative chronology of the changes is that Rule (1) took place first (**sto* > *stoy*) and then sometime later the change in Rule (2) occurred (*stoy* > *esto*).

8.3.2 Fifth example: Classical Greek

In Classical Greek paradigms, we find alternative forms of morphemes such as:

- genes-si 'race, family (dative plural)'
- gene-os 'race, family (genitive singular)'

Here we see two variants (allomorphs) of the root: *gene-* when followed by a vowel-initial suffix (as in *gene-os*, with the 'genitive singular' *-os*), and *genes-* when followed by a consonant-initial suffix (as with 'dative plural' *-si* in *genes-si*). Since there is no compelling phonetic motivation for a language to insert precisely an *s* before consonants (not *gene-si* > *genes-si*), we assume that the original form had the root-final *s* and that this *s* was lost between vowels, represented in Rule (1):

Rule (1) (Deletion of intervocalic *s*): $s > \emptyset / V_V$

The reconstruction and the result of this change are seen in the historical derivation presented in Table 8.7. However, in a different set of forms in Classical Greek, we encounter morphemes with different variants

TABLE 8.7: Derivation showing loss of intervocalic *s* in Classical Greek

	‘dative plural’	‘genitive singular’
Pre-Greek:	*genes-si	*genes-os
Rule (1) (Deletion of intervocalic <i>s</i>):	—	geneos
Classical Greek	genessi	geneos

(allomorphs) in which *t* and *s* alternate, where *s* is found intervocalically, as in:

ambros-ia ‘food of the gods’ (that is, ‘immortality’)/*ambrotos*
‘immortal’
pos-is ‘drink, beverage’/*potēs* ‘a drinking, a drink’

In this instance, we might first attempt to reconstruct internally by choosing the variant with *s* as original with a rule to show how it changed to *t* under certain circumstances; or vice versa, we might assume that the original forms are to be reconstructed with *t* with a rule to change this original *t* to *s* in appropriate contexts. The sound change of *s* to *t* before various vowels is extremely rare, and therefore, based on the known directionality of change, the reconstruction which presupposes **s* is unlikely. However, the change of *t* to *s* before *i* is found in many languages around the world, and in these data we see that the alternant with *s* is always before *i*, which leads us to reconstruct **t* as original and to postulate Rule (2):

Rule (2): $t > s / __ i$

The reconstruction of these forms and the application of this change to them are illustrated by the historical derivation shown in Table 8.8.

TABLE 8.8: Derivation showing *t* to *s* before *i* in Classical Greek

	‘immortality’	‘immortal’	‘drink’	‘drinking’
Pre-Greek:	ambrot-ia	ambrot-os	.pot-is	potēs
Rule (2) (<i>t</i> to <i>s</i> before <i>i</i>):	ambrosia	—	posis	—
Greek:	ambrosia	ambrotos	posis	potēs

Now that we have postulated two changes which affect Pre-Greek, Rules (1) and (2), the question of relative chronology comes up: which change took place earlier, which later? If we assume that the relative chronology was that first the change in Rule (2) took place and then later the change of Rule (1) occurred, we end up with the wrong result

Internal Reconstruction

for forms such as *ambrosia* and *posis*, as shown in the hypothetical historical derivation of Table 8.9. Since ~~*ambroia~~ and ~~*pois~~ are erroneous,

TABLE 8.9: Hypothetical derivation showing wrong chronological order in Classical Greek

Pre-Greek:	*ambrot-ia	*pot-is	*genes-os	*genes-si
Rule (2) (<i>t</i> to <i>s</i> before <i>i</i>):	ambrosia	posis	—	—
Rule (1) (Deletion of intervocalic <i>s</i>):	ambroia	pois	geneos	—
Erroneous Greek:	*ambroia	*pois	geneos	genessi

the relative chronology must be that first the change of Rule (1) (*s* > Ø/V__V) took place and then sometime later, after the change in which intervocalic *s* was deleted had run its course, Rule (2) (*t* > *s* / __i) created some new forms with intervocalic *s*, the result of the change *t* > *s* / __i, as seen in the correct historical derivation in Table 8.10.

TABLE 8.10: Derivation showing the correct chronological order in Classical Greek

Pre-Greek:	*ambrot-ia	*pot-is	*genes-os	*genes-si
Rule (1) (Deletion of intervocalic <i>s</i>):	—	—	geneos	—
Rule (2) (<i>t</i> to <i>s</i> before <i>i</i>):	ambrosia	posis	—	—
Greek:	ambrosia	posis	geneos	genessi

Often, if comparative evidence from related languages is available, we can check the accuracy of our internal reconstructions. In the case of Greek *geneos* ‘race, family (genitive singular)’, which we postulated to be from Pre-Greek **genes-os*, the presence of an original *-*s*- which we reconstructed for the Pre-Greek form is confirmed by cognates in some of Greek’s sister languages, as in Sanskrit *jānas-as* and Latin *gener-is* (both ‘genitive singular’), which show the -*s*- that we reconstructed in Pre-Greek **genes-* (in Latin the -*r*- of *gener-is* is due to the rhotacism of an earlier intervocalic -*s*- – *genesis* > *generis*).

8.3.3 Sixth example

Let us look at one more example, also from Classical Greek. Consider first the following forms:

<i>Nominative singular</i>	<i>Genitive singular</i>	
(1) ait ^h ɔps	ait ^h ɔpos	Ethiopian
(2) klɔ:ps	klo:pós	thief

<i>Nominative singular</i>	<i>Genitive singular</i>	
(3) p ^h léps	p ^h lebós	vein
(4) p ^h úlaks	p ^h úlakos	watchman
(5) aîks	aigós	goat
(6) sálpiŋks	sálpiŋgos	trumpet
(7) t ^h ε:s	t ^h ε:tós	serf
(8) elpís	elpídos	hope
(9) órni:s	órni:t ^h os	bird
(10) kórus	kórut ^h os	helmet
(11) hrí:s	hri:nós	nose
(12) delp ^h í:s	delp ^h í:nos	dolphin

Throughout these data, we see the non-alternating suffixes *-s* ‘nominative singular’ and *-os* ‘genitive singular’; since they do not alternate, the best that we can do is tentatively reconstruct these to Pre-Greek as **-s* and **-os*, respectively. In (1), (2) and (4), we also see no alternations in the roots, only the non-alternating morphemes, *ait^híop-* ‘Ethiopian’, *klo:p-* ‘thief’ and *p^húlak-* ‘watchman’, presumably from Pre-Greek **ait^híop-*, **klo:p-* and **p^húlak-*, respectively. However, in the other forms, we see alternations: (3) *p^hlep-/p^hleb-*, (5) *aik-/aig-*, (6) *sálpiŋk-/sálpiŋg-*, (7) *t^hε:-/t^hε:t-*, (8) *elpí-/elpíd-*, (9) *órni:-/órni:t^h-*, (11) *hri:-/hri:n-* and (12) *delp^hí:-/delp^hí:n-*. These each require a single original form in internal reconstruction and postulated changes which derive the variant forms. In the case of (3) *p^hlep-/p^hleb-*, two hypotheses suggest themselves: Hypothesis I: reconstruct for (2) **p^hlep-* and assume the *p^hleb-* allomorph is the result of intervocalic voicing, since it is found with *-os* in *p^hleb-ós*. Let’s call this Rule (A):

Rule (A) (intervocalic voicing): $p > b / V_V$

TABLE 8.11: Derivation for Hypothesis I for Classical Greek ‘vein’

	<i>‘nominative singular’</i>	<i>‘genitive singular’</i>
Pre-Greek	* p ^h lép-s	*p ^h lep-ós
Rule (A) ($p > b / V_V$):	—	p ^h leb-ós
Classical Greek	p ^h léps	p ^h lebós

This hypothesis would give us the derivation in Table 8.11. Hypothesis I would be fine if it only had to account for the alternation in *p^hléps/p^hlebós*. The sound change postulated in Rule (A) would account for the *p/b* alternation in this form, but it makes the further prediction that Pre-Greek **ait^híop-os* ‘Ethiopian (genitive singular)’ should have

Internal Reconstruction

become *ait^híobos* by the intervocalic voicing of Rule (A). However, this is wrong; **ait^híobos* does not occur, as the correct form is *ait^híopos*. This means that we must abandon (or at least seriously modify) Hypothesis I. Let us now look at Hypothesis II.

Hypothesis II: reconstruct **p^hleb-* for (3) and assume that the *p^hlep-* allomorph is the result of devoicing before *s*, since it is found with *-s* in *p^hlep-s* (nominative singular). Let's call this Rule (B):

Rule (B) (devoicing before *s*): *b > p / __s* (also *g > k* and *d > t*, as in examples below)

TABLE 8.12: Derivation for Hypothesis II for Classical Greek 'vein'

	'nominative singular'	'genitive singular'
Pre-Greek	*p ^h léb-s	*p ^h leb-ós
Rule (B) (<i>b > p / __s</i>):	p ^h léps	—
Classical Greek	p ^h léps	p ^h lebós

This hypothesis would give the derivation in Table 8.12. Hypothesis II accounts for the *p/b* alternation in *p^hléps/p^hlebós*, but does not erroneously predict in (1) that Pre-Greek **ait^híop-os* 'Ethiopian (genitive singular)' should become **ait^híobos* (as the intervocalic voicing of Rule (A) in Hypothesis I does). Rather, in Hypothesis II we postulate Pre-Greek **ait^híop-s* and **ait^híop-os*, and since these words have no *b*, nothing will change in Rule (B), which affects only forms with *b* (such as *p^hlebós/p^hléps*), as illustrated in Table 8.13.

TABLE 8.13: Derivation of **ait^híop-* 'Ethiopian' in Hypothesis II

	'nominative singular'	'genitive singular'
Pre-Greek	*ait ^h íop-s	*ait ^h íop-os
Rule (B) (<i>b > p / __s</i>):	—	—
Classical Greek	ait ^h íops	*ait ^h íopos

Thus, Hypothesis II makes correct predictions, while Hypothesis I makes erroneous predictions; therefore Hypothesis II is accepted and Hypothesis I rejected. Since the forms in (2) follow the same pattern, we reconstruct **klo:p-* 'thief' for its root (**klo:p-s* 'nominative singular' and **klo:p-ós* 'genitive singular').

Turning now to the alternants in the forms in (5) for 'goat', *aík-/aig-*, we follow the pattern in Hypothesis II further, reconstructing Pre-Greek **aig-* 'goat' and applying Rule (B) (devoicing before *s*) to derive the

aík- variant found in *aík-s* 'nominative singular'. That is, we reconstruct **aig-s* 'goat (nominative singular)' which becomes *aiks* by Rule (B), and **aig-ós* 'goat (genitive singular)' which remains *aigós*, since no changes apply to it. The two variants of the root in (6), *sálpigk-/sálpig-* 'trumpet', follow the same pattern, and we therefore reconstruct **sálpig-s* 'nominative singular' and **sálpig-os* 'genitive singular' in this case.

If we continue to follow the pattern in Hypothesis II, given *t^hε:t-ós* 'serf (genitive singular)' in (7), we would reconstruct Pre-Greek **t^hε:t-ós* and we would expect the nominative singular to be *✱t^hε:t-s*; however, the actually occurring nominative singular form is *t^hε:s*. Similarly in (8), from *elpíd-os* '(genitive singular)' we would expect the nominative singular to be the non-occurring *✱elpits*, that is, a Pre-Greek form **elpid-s* to which Rule (B) (devoicing before *s*) applied would give *✱elpits*. However, we do not get *elpits*, but rather *elpís*. Similarly, from *órni:t^h-os* in (9), *kóru^h-os* in (10), *hri:n-ós* in (11) and *delp^hi:n-os* in (12) we would expect the corresponding nominative singular forms to be *✱órni:t^h-s*, *✱kóru^h-s*, *✱hri:n-s* and *✱delp^hi:n-s*, respectively, not the actually occurring *órni:s*, *kórus*, *hri:s* and *delp^hi:s*. Unlike the forms in (1–6) whose roots end in labials (*p* or *b*) or velars (*k* or *g*), what the forms in (7–12) have in common is that their root-final consonant is an alveolar (*t*, *d*, *t^h*, *n*) in the genitive singular forms, which is missing from the nominative singulars. It would not be possible, starting with the nominative singular forms which lack these root-final consonants, to write a plausible account to predict just which consonant would be added in each instance to derive the genitive singular forms. Therefore, we reconstruct for Pre-Greek roots the forms reflected in the genitive singulars (as we did for the forms in (1–6) in Hypothesis II), and then derive the nominative singular variants by postulating Rule (C), deletion of alveolars before *s*:

Rule (C) (alveolar deletion before *s*): *t*, *d*, *t^h*, *n* > Ø / __ *s*

Note that in this case we cannot tell whether Rule (B) took place before Rule (C) or whether the historical events happened in the reverse order, since in either sequence we obtain correct results. In the order Rule (B) followed by Rule (C), reconstructed **elpid-s* would first be devoiced by Rule (B), giving *elits*, and then the *t* would be lost by Rule (C) (alveolar loss before *s*), giving the correct form *elpís* (that is, **elpid-s* > by Rule (B) *elits* > by Rule (C) *elpís*). In the order Rule (C) followed by Rule (B), reconstructed **elpid-s* would become *elpís* by Rule (C), in which the final alveolar (*d* in this case) is lost before the *-s* of the nominative singular; Rule (B) would then not apply to this form, since there

would no longer be a *d* which could be made voiceless (*t*) by this rule (that is, **elpid-s* > by Rule (C) *elpís*; Rule (B) not applicable; result: Classical Greek *elpís*).

The derivation of the nominative singular forms from the postulated Pre-Greek internal reconstruction to Classical Greek is illustrated in Table 8.14.

TABLE 8.14: Internal reconstruction of Classical Greek 'nominative singular' forms

<i>Pre-Greek</i>	<i>Rule B</i> (devoicing)	<i>Rule C</i> (alveolar loss before <i>s</i>)
(1) *ait ^h ɔp-s	—	—
(2) *kló:p-s	—	—
(3) *p ^h léb-	p ^h lép-s	—
(4) *p ^h úlaks	—	—
(5) *aíg-s	aík-s	—
(6) *sálping-s	sálpink-s	—
(7) *t ^h ɛ:t-s	—	t ^h ɛ:s
(8) *elpíd-s	elpís	elpís
(9) *óri:t ^h -s	—	óri:s
(10) *kórut ^h -s	—	kórus
(11) *hrí:n-s	—	hrí:s
(12) *delp ^h í:n-s	—	delp ^h í:s

8.4 The Limitations of Internal Reconstruction

In attempting to apply the method of internal reconstruction, we need to keep in mind the circumstances in which we can expect more reliable results and those where it is of limited or no value for recovering a language's history. Let us examine some of these limitations.

(1) The strongest limitation is that, while internal reconstruction is often able to recover conditioned changes, *internal reconstruction cannot recover unconditioned changes*. For example, in the unconditioned merger of **e*, **o*, **a* to *a* in Sanskrit (seen in Chapter 2), these original vowels ended up as *a*. If we attempt to reconstruct internally the Pre-Sanskrit forms of *dánta* 'tooth' or *dva-* 'two', we find no alternations in these vowels which would provide clues to the fact that *danta* originally had **e* (Proto-Indo-European **dent-*, compare Latin *dent-*) and that *dva-* had **o* (Proto-Indo-European **dwo-*, compare Latin *duo-*). It is simply

impossible to recover via internal reconstruction the unconditioned change which these Sanskrit vowels underwent: if *a* is all we ever see, there is no basis in Sanskrit itself for seeing anything else in the past of the *a* which occurs in these words.

(2) The method may be reliable if later changes have not eliminated (or rendered unrecognisable) the context or contexts which condition the change that we would like to recover as reflected in alternations in the language. We have seen several examples of this in the cases discussed in this chapter. However, *internal reconstruction can be difficult or impossible if later changes have severely altered the contexts which conditioned the variants that we attempt to reconstruct*. For example, some splits are impossible to recover due to subsequent changes, as illustrated by the case of voiced fricatives in English. We observe in English such forms as *breath/breathe* ([brɛθ]/[brɛð]), *bath/bathe* ([bæθ]/[beɪð]), *wreath/wreathe* ([riθ]/[rið]) which suggest an alternation between *θ* and *ð* (voiceless and voiced dental fricative). Because we can identify alternations, we would like to be able to reconstruct a single original form, but since in these forms both alternants can occur in exactly the same phonetic environment, we have no basis for reconstruction. From other sources of information, however, we know that the voiced fricatives in Old English were allophones of the voiceless fricatives in intervocalic position. Remnants of this rule are seen in such forms as *mouths* (with [ð], compare *mouth* with [θ]) and *paths* (with [ð], compare *path* with [θ]), and so on. The problem is that, due to later sound changes which eliminated certain vowels, these voiced fricatives are no longer intervocalic: these later changes have so altered the context which conditioned the change to voicing of fricatives between vowels that, in spite of the alternations we find which propel us to attempt to reconstruct, we are unable to do so with any reliability in this case. Moreover, later loanwords have also made the original context which conditioned the alternation no longer clearly visible. For example, in looking at *mother*, *rather* and *either* (each with intervocalic [ð]), we might be tempted to see evidence of the former intervocalic voicing (*θ* > *ð*/V__V); however, later loanwords such as *lethal*, *ether*, *method*, *mathematics* and so on, with intervocalic [θ], obscure the former intervocalic voicing beyond recognition, since, after the borrowings entered the language, [θ] and [ð] are both found between vowels, and the former complementary distribution with only [ð] intervocalically and [θ] elsewhere no longer holds. In short, subsequent sound changes and borrowings have rendered the conditioning of the former intervocalic voicing of fricatives in English unrecognisable, making internal reconstruction in this case unsuccessful.

Another example (already considered in a different context in Chapter 2) which illustrates this point is that of such singular–plural alternations as seen in *mouse/mice* and *goose/geese*. Given the alternations, we would like to be able to apply internal reconstruction, but the context which originally produced these variant forms is now totally gone, due to subsequent changes. Though today such plurals are irregular, they came about in a relatively straightforward way. In most Germanic languages (except Gothic), back vowels were fronted (underwent ‘umlaut’) when followed by a front vowel in the next syllable, and the plural suffix originally contained a front vowel, as in Proto-Germanic **mu:s* ‘mouse’/**mu:s-iz* ‘mice’ and **go:s* ‘goose’/**go:s-iz* ‘geese’. In the plural, the root vowels were fronted in Pre-English times: *mu:s-i* > *my:s-i* and *go:s-i* > *gø:s-i*. Two later changes took place: this final vowel was lost, and the front rounded vowels *y* and *ø* became unrounded to *i* and *e* respectively, merging with *i* and *e* from other sources. These changes produced the alternations, *mi:s* and *ge:s* as the plurals, but *mus* and *go:s* as the singulars. Finally, all these forms underwent the Great Vowel Shift, giving Modern English /*maus*/ ‘mouse’, /*mais*/ ‘mice’, /*gus*/ ‘goose’ and /*gis*/ ‘geese’ (see Chapter 2). This sequence of changes is represented in Table 8.15.

TABLE 8.15: Historical derivation of ‘mouse’, ‘mice’, ‘goose’, ‘geese’

	‘mouse’	‘mice’	‘goose’	‘geese’
Proto-Germanic	* <i>mu:s</i>	* <i>mu:s-iz</i>	* <i>go:s</i>	* <i>go:s-iz</i>
Early Pre-English	<i>mu:s</i>	<i>mu:s-i</i>	<i>go:s</i>	<i>go:s-i</i>
Umlaut	—	<i>my:s-i</i>	—	<i>gø:s-i</i>
Loss of -i	—	<i>my:s</i>	—	<i>gø:s</i>
Unrounding	—	<i>mi:s</i>	—	<i>ge:s</i>
Great Vowel Shift	<i>maus</i>	<i>mais</i>	<i>gus</i>	<i>gis</i>
Modern English	/ <i>maus</i> /	/ <i>mais</i> /	/ <i>gus</i> /	/ <i>gis</i> /

However, since the environment for umlaut was lost in subsequent changes which deleted the *-i* which had caused the umlauting, we are unable to recover this history through internal reconstruction, even though the alternations seen in these singular–plural pairs provoke us to imagine that some historical explanation which we cannot recover by this method alone lies behind these different forms of the same root.

Finally, while the examples presented in this chapter deal with sound changes, it is important to mention that internal reconstruction of morphology and aspects of syntax is also possible in favourable circumstances.

8.5 Internal Reconstruction and the Comparative Method

Sometimes it is suggested that internal reconstruction should be undertaken first and the comparative method applied afterwards. In this view, internal reconstruction would help us to see beyond the effects of many recent changes so that we would have access to an earlier stage of the language for use in the comparative method when sister languages are compared with one another. This is often the case. Usually, both internal reconstruction and the comparative method lead in the same direction. However, in reality there is no rigid principle about which method is to be applied first – they can be applied in either order. Often, reconstruction by the comparative method reveals alternations which the proto-language underwent, and it is perfectly legitimate to apply internal reconstruction to these proto-alternations in order to reach even further back in time, to a pre-proto-language. In this event, the sequence would be the comparative method first, followed by internal reconstruction, or perhaps first internal reconstruction to the individual languages, then the comparative method to related languages, and then internal reconstruction again to the reconstructed proto-language. In any event, it is important to check, when internal reconstruction is applied before the comparative method, that it does not factor out alternations which were present in the proto-language.

A case from Balto-Finnic will illustrate the point. Finnish had alternations such as *jalka* 'leg (nominative singular)' / *jalan* 'leg (genitive singular)'. This has been internally reconstructed as **jalka* / **jalka-n*, under the assumption that **k* was lost in non-initial closed syllables (in this case in the genitive form, the syllable is closed by *n*, causing the change). (Some postulate that **k* in closed syllables first changed to *γ* and then later was lost (**k* > *γ* > *Ø*), and this view is no doubt aided by the fact that there are older written materials which document that this is precisely what happened in the history of these words.) If the comparative method is applied after internal reconstruction, then the forms utilised by the comparative method will be Pre-Finnish **jalka* and **jalka-n*, and evidence of the alternation will have been factored out. However, if we turn to sister languages of Finnish in the Balto-Finnic subgroup, we find the following forms: Estonian *jalk* 'leg (nominative singular)' and *jala* 'leg (genitive singular)'. Estonian underwent two additional changes which Finnish did not, loss of final vowels in certain contexts (*jalka* > *jalk* 'nominative singular') and loss of final *-n* (*jalan* > *jala* 'genitive singular'). An internal reconstruction of Estonian results

Internal Reconstruction

in **jalka* 'leg (nominative singular)' and **jalka(X)* 'leg (genitive singular)', where from other forms it is known that the alternation normally takes place in closed syllables and therefore something now missing, signalled here by X, is posited as formerly having closed the syllable and causing the alternation. Finally, Lapp, another sister language, has the forms *juolke* 'leg (nominative singular)' / *juolge* 'leg (genitive singular)', where Lapp, too, has lost final *-n* in an independent change, and internal reconstruction gives **juolke* 'leg (nominative singular)' / **juolke(X)* 'leg (genitive singular)'. Notice now that if we compare only the results of internal reconstruction in these three sister languages, we have no access to the alternation, as seen in Table 8.16. However, if the comparative method is applied before internal reconstruction, the alternation is revealed to have been part of the proto-language, as seen in Table 8.17. The moral is clear: internal reconstruction can help by offering forms to be compared in the comparative method which see past the disruptions of many recent changes; nevertheless, caution should be exercised so that alternations which should legitimately be reconstructed to the proto-language by the comparative method are not factored out by previous internal reconstruction and then lost sight of. (See Anttila 1989: 274.)

TABLE 8.16: Comparison of Balto-Finnic 'leg' forms after internal reconstruction

	<i>nominative singular</i>	<i>genitive singular</i>
Pre-Finnish	<i>*jalka</i>	<i>*jalka-n</i>
Pre-Estonian	<i>*jalka</i>	<i>*jalka(X)</i>
Pre-Lapp	<i>*juolke</i>	<i>*juolke(X)</i>
Proto-Balto-Finnic	<i>**jalka</i>	<i>**jalka-n</i>

TABLE 8.17: Comparison of Balto-Finnic 'leg' forms before internal reconstruction

	<i>nominative singular</i>	<i>genitive singular</i>
Finnish	<i>jalka</i>	<i>jala-n</i>
Estonian	<i>jalk</i>	<i>jala</i>
Lapp	<i>juolke</i>	<i>juolge</i>
Proto-Balto-Finnic	<i>*jalka</i>	<i>*jalʸa-n</i>

8.6 Exercises

Exercise 8.1 San Juan La Laguna Tz'utujil internal reconstruction

San Juan La Laguna is a principal dialect of Tz'utujil, a Mayan language of Guatemala. Compare the following words; find the forms which have variants; apply internal reconstruction to these forms. Reconstruct a single original form for the morphemes which have alternate forms, and postulate the changes which you think must have taken place to produce these variants. Present your reasoning; why did you choose this solution and reject other possible hypotheses?

- | | | | |
|----------|------|-----------|--------------------------|
| 1. te:p | cold | -te:w-il | coldness |
| 2. kop | hard | -kow-il | hardness |
| 3. ule:p | land | -ule:w-il | (pertaining to the) land |
| 4. tap | crab | -tap-il | (pertaining to the) crab |
| 5. čkop | bird | -čkop-il | (pertaining to the) bird |

Exercise 8.2 San Cristóbal Poqomchi' internal reconstruction

A principal dialect of Poqomchi', a Mayan language of Guatemala, is spoken in San Cristóbal (Alta Verapaz). Compare the following words; find the roots which have variants; apply internal reconstruction to these forms. Reconstruct a single original form for the morphemes which have alternate forms, and postulate the changes which you think must have taken place to produce these variants. Present your reasoning; why did you choose this solution and reject other possible hypotheses?

NOTE that Poqomchi' has two allomorphs for 'my', *w-* before vowels and *in-* before consonants; do not attempt to reconstruct a single original form for 'my'.

- | | | | |
|---------|--------------|---------|-----------------|
| 1. mul | rabbit | w-imul | my rabbit |
| 2. xa? | seed | w-ixa? | my seed |
| 3. ʃi:m | corn (maize) | w-iʃi:m | my corn |
| 4. ʃoq | woman | w-iʃoq- | my woman (wife) |
| 5. ha? | water | in-ha? | my water |
| 6. či:m | bag | in-či:m | my bag |
| 7. ʃaq | leaf | in-ʃaq | my leaf |
| 8. mul | waterjug | in-mul | my waterjug |

Exercise 8.3 Kaqchikel internal reconstruction

Kaqchikel is a Mayan language of Guatemala. Compare the following words; find the forms which have variants; apply internal reconstruction

Internal Reconstruction

to these forms. Reconstruct a single original form for the morphemes which have alternate forms, and postulate the changes that you think must have taken place to produce these variants. Present your reasoning; why did you choose this solution and reject other possible hypotheses? (Note that *-ir* is the inchoative suffix, meaning 'to become/turn into', and *-isax* is the causative suffix.)

- | | | | |
|--------|-------------|---|-------------------------------------|
| 1. nax | far | naxt-ir-isax | to distance (to make it become far) |
| 2. čox | straight | čoxm-ir
čoxm-il | to become straight
straightness |
| 3. war | sleep | wart-isax | to put to sleep (to cause to sleep) |
| 4. ax | ear of corn | axni-
(in <i>axni q'</i> or 'corn liquor'; -i 'adjective suffix', <i>q'</i> or 'liquor') | of corn |

Exercise 8.4 American Spanish internal reconstruction

Account for the stem vowel alternations in the following by proposing an internal reconstruction for the roots and write out the changes needed to derive the different forms. Except for stress written over the vowel, these forms are given in Spanish orthographic spelling. (The few phonetic forms given represent American Spanish.)

<i>Third person present indicative</i>	<i>Infinitive</i>	
empiésa	empesar	begin
entiénde	entender	understand
piénsa	pensar	think
piérde	perder	lose
prefiére	preferir	prefer
siénta	sentar	sit
siénte	sentir	feel
duéle	doler	hurt, pain
duérme	dormir	sleep
muére	morir	die
muéstra	mostrar	show
pruéba	probar	test, prove, try out
suéna	sonar	sound
vuélve	volver	return

*Third person present
indicative*

Infinitive

créce /krése/	crecér /kresér/	grow
débe	debér	owe
éntra	entrár	enter
fréna	frenár	put on brakes, restrain
méte	metér	put
córré	corrér	run
gósa	gosár	enjoy
móra	morár	dwell
póne	ponér	put, place
róba	robár	rob, steal
cuéce /kuése/	cocér /kosér/	cook
cóse /kóse/	cocér /kosér/	sew

Exercise 8.5 Internal reconstruction of Finnish vowels

Compare the following words; what happens when the *-i* 'plural' or *-i* 'past tense' morphemes are added to these roots? State what the variants (allomorphs) of the roots are; apply internal reconstruction to these forms. Reconstruct a single original form for each root morpheme and postulate the changes which you think must have taken place to produce these variants. Present your reasoning; why did you choose this solution and reject other possible hypotheses?

NOTE: double vowels, such as *aa*, *yy* and so on, are phonetically long vowels ([a:], [y:] and so on).

HINT: native Finnish words do not have (surface) *oo*, *ee* or *øø*; rather, Finnish has *uo*, *ie* and *yø* where long mid vowels would be expected. The correct answer for words containing these diphthongs does NOT involve the first vowel being lost when *i* is added (that is, NOT *suo* + *i* > *soi* by loss of *u*).

saa	'gets'	sai	'got'
maa	'land'	mai-	'lands'
puu	'tree'	pui-	'trees'
luu	'bone'	lui-	'bones'
pii	'tooth (of rake)'	pii-	'teeth'
pææ	'head'	pæi-	'heads'
pyy	'wood grouse'	pyi-	'wood grouse (plural)'
tæi	'louse'	tæi-	'lice'
suo	'grants'	soi	'granted'
suo	'swamp'	soi-	'swamps'

Internal Reconstruction

luo	‘creates’	loi	‘created’
syø	‘eats’	søi	‘ate’
lyø	‘hits’	løi	‘hit’
tie	‘road’	tei-	‘roads’
vie	‘takes’	vei	‘took’
talo	‘house’	taloi-	‘houses’
hillo	‘jam’	hilloi-	‘jams’
halu	‘desire’	halui-	‘desires’
hyll	‘shelf’	hylli-	‘shelves’
nukke	‘doll’	nukkei-	‘dolls’
tekø	‘deed’	tekøi-	‘deeds’
sata	‘hundred’	satoi-	‘hundreds’
pala	‘piece’	paloi-	‘pieces’
hella	‘stove’	helloi-	‘stoves’ (‘cookers’)
hilkka	‘hood’	hilkoi-	‘hoods’
hiha	‘sleeve’	hihoi-	‘sleeves’
sota	‘war’	sotei-	‘wars’ (soti- in Modern Finnish)
pora	‘drill’	porei-	‘drills’ (pori- in Modern Finnish)
muna	‘egg’	munei-	‘eggs’ (muni- in Modern Finnish)
rulla	‘roll’	rullei-	‘rolls’ (rulli- in Modern Finnish)
tupa	‘cabin’	tupei-	‘cabins’ (tupi- in Modern Finnish)
jyvæ	‘grain’	jyvei-	‘grains’ (jyvi- in Modern Finnish)
hætæ	‘distress’	hætei-	‘distresses’ (hæti- in Modern Finnish)
møkæ	‘hullabaloo’	møkei-	‘hullabaloo’ (møki- in Modern Finnish)

Exercise 8.6 Nahuatl internal reconstruction problem

Nahuatl is a Uto-Aztecan language, spoken by over 1,000,000 people in Mexico; it was the language of the Aztecs and the Toltecs. Compare the following words. Find the forms which have variants; apply internal reconstruction to these forms. Reconstruct a single original form for the morphemes which have alternate shapes, and postulate the changes which you think must have taken place to produce these variants. Can

you establish a relative chronology for any of these changes? Present your reasoning; why did you choose this solution and reject other possible hypotheses? (NOTE: *tl* is a single consonant, a voiceless lateral affricate.) Note that the morpheme which has the allomorphs *-tl*, *-tli*, *-li* is traditionally called the 'absolutive'; it has no other function than to indicate a noun root which has no other prefixes or suffixes.

1a	tepos-tli	axe	13a	ikfi-tl	foot
1b	no-tepos	my axe	13b	no-kfi	my foot
1c	tepos-tlan	place of axes	14a	ikni-tl	fellow
2a	kak-tli	shoe, sandal	14b	no-kni	my fellow
2b	no-kak	my shoe, sandal	15a	isti-tl	finger nail
3a	tef-tli	flour	15b	no-sti	my finger nail
3b	no-tef	my flour	16a	ihti-tl	stomach
4a	mis-tli	cougar	16b	n-ihti	my stomach
4b	mis-tlan	place of cougars	17a	īfte-tl	eye
5a	kal-li	house	17b	n-īfte	my eye
5b	no-kal	my house	18a	ihwi-tl	feather
6a	tlāl-li	land	18b	n-ihwi	my feather
6b	no-tlāl	my land	19a	itskwin-tli	little dog
7a	čīmal-li	tortilla griddle	19b	n-itskwin	my little dog
7b	no-čīmal	my tortilla griddle	20a	ička-tl	cotton
7c	čīmal-lan	place of tortilla griddles	20b	no-čka-tl	my cotton
8a	mīl-li	cornfield	21a	okič-tli	male, man
8b	no-mīl	my cornfield	21b	n-okič	my husband
8c	mīl-lan	place of cornfields	22a	kafi-tl	bowl
9a	āma-tl	paper, fig tree	22b	no-kaf	my bowl
9b	n-āma	my paper, fig tree	23a	kwawi-tl	tree, wood
9c	āma-tlan	place of paper, fig trees	24a	no-kwaw	my tree, wood
10a	e-tl	bean	25a	fāmi-tl	brick
10b	n-e	my bean	25b	no-fān	my brick
10c	e-tlan	place of beans	26a	pāmi-tl	flag
11a	siwā-tl	woman	26b	no-pān	my flag
11b	no-siwā	my wife	27a	kōmi-tl	jug
11c	siwā-tlan	place of women	27b	no-kōn	my jug
12a	ol-li	rubber	28a	māyi-tl	hand
12b	n-ol	my rubber	28b	no-māy	my hand
12c	ol-lan	place of rubber			

Exercise 8.7 Jicaque internal reconstruction problem

Jicaque (called Tol by its speakers) is spoken in Honduras. State the variants (allomorphs) of the roots and of the possessive pronominal prefixes; apply internal reconstruction to these forms. **Reconstruct** a single original

form for each root morpheme and write the changes which you think must have taken place to produce these variants. Present your reasoning; why did you choose this solution and reject other possible hypotheses? (HINT: the original form of the possessive pronouns was: **n*- 'my', **hi*- 'your', **hu*- 'his'; original **n+h* > *n*.) Note that what is structurally a labialised *w* is realised phonetically as [w^ɪ], but is written as *w^w* in this problem.

<i>my</i>	<i>your</i>	<i>his</i>	<i>Meaning of the noun root</i>
1 mbata	peta	pota	duck
2 mbapaj	pepaj	popaj	father
3 ndaʔ	teʔ	toʔ	man's brother
4 ndarap	terap	torap	woman's younger sister
5 ŋk ^h an	k ^h en	k ^h on	bed
6 nlara	lera	lora	mouth
7 nts ^h am	ts ^h em	ts ^h om	foot
8 mbe	hepe	p ^w e	rock, stone
9 mbep	hepep	p ^w ep	finger nail
10 mberam	heperam	p ^w eram	tongue
11 mp ^h el	hep ^h el	p ^h wel	arm
12 ŋgerew	hekerew	k ^w erew	cousin
13 ŋk ^h ere	hek ^h ere	k ^h were	bone
14 ŋgiwaj	hikiwaj	k ^w iwaj	woman's brother
15 njič	hičič	č ^w ič	tendon
16 njipe	hičipe	č ^w ipe	paired sibling
17 mbomam	p ^j omam	hopomam	chokecherry
18 mp ^h ok	p ^h jok	hop ^h ok	cheek
19 ŋgol	k ^j ol	hokol	belly
20 nts'ul	ts' ^j oul	huts'ul	intestines
21 mp ^h ija	p ^h j ^h ija	hi ^p ^h ija	tobacco
22 mp'is	p' ^j es	hi ^p 'is	deer
23 ndim	t ^j em	hi ^t im	heel
24 mbasas	wesas	wosas	woman's sister-in-law
25 mbis	hiwis	w ^w is [w ^ɪ in]	tooth
26 mbin	hiwin	w ^w is [w ^ɪ in]	toad
27 mbojum	w ^j ojum	howojum	husband
28 namas	mes	mos	hand
29 nemen	hemen	m ^w en	neck
30 nimik	himik	m ^w ik	nose
31 ni ^m i ⁿ i	m ^j eni	hi ^m i ⁿ i	yam
32 namap	hemap	homap	aunt
33 nasunu	hesunu	hosunu	chest

Syntactic Change

Our speech hath its infirmities and defects, as all things else have. Most of the occasions of the world's troubles are grammatical.

(Montaigne, *Essays* II, xii)

9.1 Introduction

The study of syntactic change is currently an extremely active area of historical linguistics. Nevertheless, there has been no generally recognised approach to the treatment of syntactic change, such as there is for sound change. While there have been some excellent studies in historical syntax in the nineteenth century and many in the last twenty years or so, syntactic change was very often not represented (or present only superficially) in the textbooks on historical syntax. The approach followed in this book is that of Harris and Campbell (1995) (on which this chapter relies heavily). In this chapter, we learn about the mechanisms of syntactic change – reanalysis, extension and borrowing – and the common pathways that grammatical changes take; that is, we are interested in the more commonly occurring kinds of syntactic changes found in the world's languages. Grammaticalisation, an approach currently of much interest, is also considered together with its limitations. Finally, the possibilities for syntactic reconstruction are described and defended.

9.2 Mechanisms of Syntactic Change

There are only three *mechanisms* of syntactic change: *reanalysis*, *extension* and *borrowing*. Let us consider these mechanisms in turn, first with a brief characterisation of each, followed by **additional examples**.

9.2.1 Reanalysis

Reanalysis changes the underlying structure of a syntactic construction, but does not modify surface manifestation. The *underlying structure* includes (1) constituency, (2) hierarchical structure, (3) grammatical categories, (4) grammatical relations and (5) cohesion. We will come to examples illustrating changes in each of these shortly. *Surface manifestation* includes (1) morphological marking (for example, morphological case, agreement, gender) and (2) word order.

An important axiom of reanalysis is *reanalysis depends on the possibility of more than one analysis of a given construction*. The following example from Finnish exemplifies both reanalysis and this axiom. In Finnish, a new postposition (seen here in (2)) was derived through reanalysis from what was formerly an ordinary noun root with a locative case (as in (1)):

- (1) *miehe-n rinna-lla*
man-Genitive chest-Adessive ('Adessive' is a locative case)
'on the man's chest' (Original)
- (2) *miehe-n rinna-lla*
man-Genitive Postposition-Adessive
'beside the man' (Reanalysed)

In this case there is nothing ambiguous or opaque at all about (1), and in fact it is still fully grammatical in the language. However, it came to be interpreted as having more than one possible analysis, as a regular noun in locative case (as in (1)), but also as a postposition (as in (2)). This new postposition in Finnish is quite parallel to the development of the preposition *abreast* of in English, which comes historically from *a(t)* 'locative' + *breast*. Such developments are common in English and other languages, as seen in English *beside* < *by* + *side*, *behind* < *by* + *hind*, and so on. In this instance, an original construction with an ordinary lexical noun in a locative case, as in (1), was the basis of the reanalysis which produced the new construction with the postposition, as in (2). Notice, however, that (1) and (2) are the same except for their internal analysis; that is, though a reanalysis took place to produce (2), the surface manifestation remained unchanged – (1) and (2) are identical in form, but not in their internal structure.

9.2.2 Extension

Extension results in changes in surface manifestation, but does not involve immediate modification of underlying structure. This is best shown through examples.

9.2.2.1 First example: change in some Finnish subordinate clauses

Finnish subordinate clauses provide an example which underwent first reanalysis and then extension. Old Finnish had sentences of the form illustrated in (3):

(3) *näen miehe-m tule-va-m*

(NOTE: orthographic *ä* is phonetically [æ])

I.see man-Accusative.Singular come-Participle-Accusative.Singular
'I see the man who is coming'

Here, the noun *miehe-m* 'man' is the direct object of the verb *näen* 'I see', and the participle *tule-va-m* 'coming/who comes' modifies this noun ('man') and agrees with it in case and number (both take the 'accusative singular' suffix *-m*). Later, Finnish underwent a sound change in which final *-m* > *-n*, and as a result the accusative singular *-n* (formerly *-m*) and genitive singular *-n* became homophonous, both *-n*. After this sound change, the resulting form, shown in (4), was seen as having two possible interpretations, in (4a) and (4b) (Acc = Accusative, Part = Participle, Pl = Plural, Sg = Singular):

(4) *näen miehe-n tule-van*

(4a) I.see man-Acc.Sg come-Part

(4b) I.see man-Gen.Sg come-Part

'I see the man who is coming'

This led to a change in which the older interpretation in (4a) was eventually eliminated and this subordinate clause construction was reanalysed as (4b). That is, *miehe-n* was reinterpreted not as the direct object (in accusative case) of the verb *näen* 'I see' as it had originally been in Old Finnish (as in the example in (3)), but as the subject (in genitive case) of the participle *tule-van* (as in (4b)). (The change is somewhat like starting with the equivalent of *I saw the man coming* and changing it to *I saw the man's coming*.) At this stage there is still no visible difference in the surface manifestation ((4a) of older Finnish and (4b) of modern Finnish are in form the same, though different in analysis).

The next phase was the *extension* of the reanalysed structure to other instances where the surface manifestation was visibly changed, as seen in the comparison of Old Finnish (5) with modern Finnish (6):

(5) *näin venee-t purjehti-va-t*

I.saw boat-Acc.Pl sail-Part.Acc.Pl

'I saw the boats that sail'

- (6) näin vene-i-den purjehti-van
I.saw boat-Pl-Gen sail-Part
'I saw the boats that sail'

In Old Finnish, sentence (5), with *venee-t* in the 'accusative plural', did not permit a second interpretation, as (4) did, where the 'accusative singular' had the same form as the 'genitive singular'; however, the reanalysis (from accusative to genitive) that began with the homophonous singular form was extended to include the plurals, so that in modern Finnish *venee-t* 'accusative plural' is no longer possible in this construction (as it was in (5) in Old Finnish), but was replaced through extension by *vene-i-den* 'genitive plural', as in (6). Where formerly the singular had two possible interpretations, accusative singular direct object of the main verb or genitive singular subject of the participle, after the change had been extended to the plural making it also genitive, the original (accusative) interpretation was no longer available.

9.2.2.2 Second example: Spanish reflexive to passive

A second example which shows both reanalysis and extension involves changes in the reflexive in Old Spanish. Old Spanish had only the reflexive as in (7), with none of the other functions that the Spanish reflexive later came to have:

- (7) Yo no vestí a Juanito; Juanito *se* vistió
I no dressed Object Johnny; Johnny *Reflexive* dressed
'I didn't dress Johnny; Johnny dressed *himself*'

A reanalysis of the reflexive took place in which *se* could also be interpreted as a passive. In the first stage of this change, certain transitive verbs with *se* and a human subject came to have multiple interpretations as either a reflexive of volitional/consentive action, or as a passive, as illustrated in (8) and (9) (REFL = reflexive):

- (8) El rico *se* entierra en la iglesia
the rich REFL bury in the church
(8a) 'The rich person has himself interred/buried in the church' (volitional reflexive; literally:
'the rich person inters himself in the church')
(8b) 'The rich person gets buried/is buried in the church'
(*passive*)
(9) Cum esto *se* vençen moros del campo
with this REFL they.conquer Moors of.the countryside
(9a) 'Therefore Moors of the countryside give themselves up

for conquered' (*consentive*; literally: 'with this Moors of the countryside conquer themselves')

- (9b) 'Therefore Moors of the countryside get conquered/are conquered' (*passive*)

In (8) and (9), different interpretations are possible, either reflexive or passive; the surface manifestation is unaltered in the new, reanalysed passive interpretation of these sentences. Also, the original reflexive construction (as in (7)) remains grammatical in Spanish. In the next step, the passive interpretation of the former reflexive *se* was extended to include not just human subjects, but also non-animate subjects, where no reflexive interpretation was possible, as in (10) and (11):

- (10) Los vino-s que en esta ciudad se vende-n . . .
the wine-Pl that in this city REFL sell-3rd.Pers.Pl
'The wines that are sold in this city . . .'
(11) Cautiváron-se quasi dos mil persona-s
they.captured-REFL almost two thousand person-Plural
'Almost two thousand persons were captured'

These sentences are now clearly passive and not reflexive; in (10) the 'wines' cannot 'sell themselves', and in (11) the 'two thousand persons' are not 'capturing themselves'.

9.2.3 Syntactic borrowing

Syntactic borrowing is much more frequent and important than some scholars have thought in the past, though others have gone to the other extreme of assuming that everything not otherwise readily explained in a language's grammar is due to borrowing. It is important to avoid such excesses but also to recognise the proper role of syntactic borrowing in syntactic change. The following is a straightforward example of syntactic borrowing. Pipil (a Uto-Aztec language of El Salvador) borrowed the comparative construction, *mas . . . ke*, from Spanish, as in (12):

- (12) ne siwa:t *mas galá:na ke* taha
the woman more pretty than you
'That woman is prettier than you are'

Compare the Spanish equivalent in (12'):

- (12') esa mujer es *más linda que* tú (/mas . . . ke/)
that woman is more pretty than you

Pipil had several different comparative expressions before its contact with Spanish, but these have been eliminated, replaced by this borrowed comparative construction.

Another case involves the extensive borrowing of grammatical elements and constructions among the Australian aboriginal languages of Arnhem Land, in particular among Ritharngu, Ngandi, Nunggubuyu and Warndarang. This includes the direct borrowing of case affixes (for example, for ergative markers, instrumental, ablative, genitive-dative-purposive, comitative), number affix, noun-class affixes (with discourse functions of reference and anaphora), diminutive affix, derivational verbal affixes, negative affix, postpositions and the inchoative verbaliser, among others (Heath 1978). (For several more examples of syntactic borrowing and discussion, see Harris and Campbell 1995: 120–50.)

9.3 Reanalysis and Extension Exemplified

As mentioned above, reanalysis can change underlying structures involving constituency, hierarchical structure, grammatical categories, grammatical relations and cohesion. We now turn to examples of reanalysis (and extension) which show changes in these sorts of syntactic patterns.

9.3.1 Constituency and hierarchical structure

The English complementiser construction with *for* + *to* is the result of the reanalysis of a former construction in which the *for* + Noun Phrase was a regular prepositional phrase which belonged to the main clause and originally had nothing to do with the complementiser construction, as in (13):

- (13) [It is bet for me] [to sleen my self than ben defouled thus]
(from Chaucer)
'It is better for me to slay myself than to be violated thus'

Here, although *me* is part of the prepositional phrase *for me*, a surface constituent, it was also co-referential to the logical subject of the infinitive *to sleen* 'to slay' (where in interpretation 'I' is the subject of 'to slay'); later *for* + Noun Phrase + Infinitive was itself reanalysed as a constituent, as seen in modern English (14), where as a single constituent the whole lot can be preposed:

- (14) [For me to slay myself] [would be better than to be violated thus]

9.3.2 Grammatical categories

Reanalyses involving change in grammatical categories are quite common; the Finnish example above (in (1) and (2)) in which a noun in locative case was reanalysed as a postposition illustrates this sort of change. Another is the change in the African language Twi in which the verb *wɔ* 'to be at' was reanalysed as the preposition *wɔ* 'at'. Many examples of grammaticalisation (below) are of this sort.

9.3.3 Grammatical relations

In the Modern English passive sentence in (15), *the king* is taken as the subject (in the nominative case):

(15) the king was offered a seat

However, in Old English in such sentences this was not the case; rather, one said not *king* but *cyning-e* 'king-Dative.Singular' (which often occurred with the definite article *pæ-m* 'the-Dative.Singular'), and in this dative form the sentence meant simply: 'to the King was offered a seat'. This is still the case in the modern German equivalent (Nom = nominative):

(15') Dem Könige wurde ein Sitz angeboten
the.Dative king.Dative was a.Nom seat.Nom offered

However, in English, due to loss of certain final vowels, the dative and nominative cases were no longer distinct (*cyning-e* > *kinge* > *king*) and thus in (15) *king* was reanalysed as the subject of the sentence in the nominative case. The grammatical relation of the nouns in such passive sentences was changed through reanalysis.

9.3.4 Cohesion

Cohesion refers to the degree of attachment which an element has to other elements, whether as a fully independent word, a clitic, an affix or an unanalysable part of a larger unit. In many changes, an element that was formerly a fully independent word becomes a clitic and then an affix, and can sometimes go on to end up as an unanalysable part of another word. Examples of this sort were seen among the cases of amalgamation in Chapter 4, and many examples of grammaticalisation (see below) are of this sort. Varieties of Nahuatl offer examples of change involving cohesion in which constructions with *nemi* 'to live, to walk' have changed so that *nemi* has lost its status as an independent word.

Originally *nemi* was an ordinary verb meaning 'to live, to walk (around)'. In Tetelcingo Nahuatl, Michoacan Nahua and North Puebla Nahuatl, a construction has developed in which *nemi* lost its independent status and has become a verb clitic meaning 'to go around doing, to be currently engaged in doing', as illustrated by North Puebla Nahuatl in (16):

- (16) čoka-ti-nemi
cry-Connective-Ambulative
'He/she goes about crying'

Huasteca Nahuatl has developed further, reanalysing the clitic *nemi* as a 'habitual' marker and moving it into the position before the verb root occupied by directional morphemes (which include 'towards', 'away from' and so on), as illustrated in (17):

- (17) ki-nen-palewiya
her-Habitual-help 'she helps her continually'

(Note that *-nen-* is a regular allomorph of *nemi* in certain environments, as in, for example, *nen(-ki)* 'he/she lived/walked'.) In these cases, the verb *nemi* has lost its independent status, exhibiting a change in degree of cohesion.

The development of Modern French yes-no questions provides additional examples of reanalysis and extension, also involving cohesion. Old French used inverted word order to mark such questions; in these, the entire verb and subject were inverted; as seen in (18) in Old French:

- (18) est morte m'amie?
is dead my.friend
'Is my friend dead?'

From around the fifteenth century, a structure came to be used in yes-no questions which developed because of preference for a cleft structure for a content question, equivalent to *Is it that my friend is dead?*, as in (19) (rather than the earlier inverted form equivalent to *Is my friend dead?*, as in (18) above):

- (19) est-ce que mon amie est morte?
is it that my friend is dead
'Is my friend dead?' (literally: 'Is it [the case] that my friend is dead?')

The earlier yes-no question pattern with inverted subject and verb, as in (18), has been reanalysed as a pattern with sentence-initial question particle *est-ce que*, as in (19). That this has become a question particle

is shown by the fact that the former verb *est* 'is' in this construction occurs only in the invariant form *est-ce* and can no longer occur in the full range of tense/aspect forms which are available for 'to be' in other contexts.

Colloquial French has developed further and has adopted an additional question particle, *ti*, whose origin and development provide a further example of reanalysis. In the mid-fifteenth century, forms like (20) contrasted with examples such as (21), where the verb ends with a *t*:

- (20) aime il? 'does he love?'
- (21a) dort-il? 'does he sleep?'
- (21b) est-il? 'is he?'
- (21c) aimerait-il? 'would he love?'

In both (20) and (21), the questions show the inversion of subject-verb, though in these examples the inverted subject is *il* 'he', following the verb. The final *l* of this pronoun was eroded in the colloquial pronunciation, leaving the examples in (21) ending phonetically in [ti], with the *t* of the verb and the *i* of the pronoun *il*. This *ti* came to be reanalysed as a marker for questions which involve third person masculine pronoun subjects. Later this *ti* was extended, gradually becoming a general interrogative particle and used not only with third person masculine forms, but in questions in general, as seen in (22) and (23):

- (22) les filles sont ti en train de dîner?
the children are Question in way of to.dine
'Are the children about to eat dinner?'
- (23) tu vas ti?
you go Question
'Are you going?'

As seen here, the reanalysed question particle *ti* has been extended far beyond its origins from verbs ending in *-t* followed by *il* 'third person masculine pronoun'. Through a change in cohesion, the *-t* of certain third person verb forms combined with *i(l)* to give the new question marker. (For more on syntactic change in general, see Harris and Campbell 1995.)

9.4 Generative Approaches

Most work on historical syntax since 1960 has taken the perspective of Generative Grammar (or its descendants). Generative linguists generally associate syntactic change with child language acquisition, seeing

syntactic change as part of what happens in the transition of grammars from one generation to the next. In this view, child language learners hear the output of adults around them and on the basis of these data they must construct their own grammar. The grammar which the children acquire reproduces the output which they hear from the adults' grammar more or less accurately, but it does not necessarily coincide with the internal structure of adults' grammar. After learning an optimal grammar as children, adults may later add rules to their grammars which make them no longer optimal. Children of the next generation, hearing the output of this non-optimal adult grammar, restructure it as they construct their own internal grammars, making it more optimal. Since the generative interpretation of syntactic change was originally modelled on the view of phonological change, we can begin to illustrate this approach with a phonological example (seen in Chapter 2).

An adult grammar of Proto-Uto-Aztecan had dictionary forms such as /sik/ 'navel' and /sɨk/ 'cold', plus an allophonic rule, Rule (1):

Rule (1): $s \rightarrow \text{ʃ} / __ i$.

By Rule (1), /sik/ 'navel' became [ʃik], but Rule (1) does not apply to /sɨk/ 'cold', since this form did not have the /i/ specified in Rule (1) for the change to take place. Later, in the transition from Proto-Uto-Aztecan to Nahuatl, adults added a new rule, Rule (2):

Rule (2): $\text{ɨ} \rightarrow i$ (merger of *i* with *ɨ*)

The adult grammar at this stage had the derivation shown in Table 9.1. Children, hearing as output [ʃik] 'navel' and [sik] 'cold', would no longer have sufficient evidence for learning Rule (1) (since some examples of *s* before *i* now do not become *ʃ*, as in [sik] 'cold'). Therefore, they learn instead an optimal grammar, which merely has the dictionary forms //ʃik// and //sik//, but without Rules (1) and (2) of the former generation's grammar, so [ʃik] and [sik] also become the children's output. In this restructuring, the no longer optimal Rules (1) and (2) are eliminated from the grammar, though the output of this more optimal grammar matches that of the adults' less optimal one in Table 9.1.

TABLE 9.1: Pre-Nahuatl phonological derivations

Dictionary form	//sik// 'navel'	//sik// 'cold'
Rule (1) (palatalisation)	ʃik	—
Rule (2) (merger)	—	sik
Surface form	[ʃik]	[sik]

Let us turn now to a syntactic example; this one is somewhat hypothetical, but figured in early generative work on syntactic change. Suppose that an earlier generation had learned a grammar with the rule that the pronoun *who* requires an object case marking (*whom*) when it occurs as the object of a verb or a preposition, and then later as adults these speakers added another rule that just deleted the object marking (*whom* → *who*). The next generation of children acquiring the language would hear only *who* as the output of the adult grammar, and would simply learn *who* in all contexts, eliminating the two adult rules. That is, the adults' non-optimal grammar would have two rules, Rule (1) to add object case marking (*whom*) in object environments, and Rule (2) to convert *whom* into *who* (deletion of the object case marking). The children learning the language, hearing only the output *who*, would not learn Rule (1) or Rule (2), but would simply learn to use *who* in all contexts and thus would construct their grammar with simpler internal structure (with *who* but no rules), and would still be able to achieve the same output as that of the adult model.

David Lightfoot's (1979, 1991) work has been very influential and is considered a major representative of later generative views. His scenario for the explanation of syntactic change is that grammatical complexity builds up gradually in a language (through minor changes of little importance) until eventually a sudden catastrophic and far-reaching restructuring of the grammar takes place which eliminates this complexity that made the language's grammar difficult for children to learn. One criticism of this view is that there is no reliable means of distinguishing the catastrophic changes (which overhaul grammars that become too complex, Lightfoot's major interest) from the gradually accumulating less significant changes. Another criticism is that catastrophic changes of this sort are extremely rare in the attested history of most languages. A central feature of Lightfoot's (1979) treatment is the claim that syntactic change (and syntax in general) is autonomous, meaning that syntactic change takes place independently of semantic relations, pragmatic considerations, discourse functions or sociolinguistic considerations. For Lightfoot, syntactic changes operate independently of considerations of meaning and use. This claim has been much criticised because syntactic rules and changes do not operate independently of meaning, use, pragmatics, sociolinguistic value judgements, foreign-language influences and so on.

Central to the generative view of language change is the notion that linguistic change in general, and therefore also syntactic change, takes place in the language acquisition process and in the transition of

grammars from one generation to the next. Many cases of syntactic changes would seem to conform to this view, though others seem at odds with it. This approach assumes that many of the kinds of changes are the results of the child language learners just getting it wrong, making mistakes. For example, this view claims for the change in the Finnish participle construction (sentences (3–6) above) that in language acquisition children incorrectly assumed that sentence (4) was to be analysed as containing the genitive singular because they incorrectly perceived what was (formerly) the accusative singular (in (4)) and then they carried through with this assumption (by extension) by imposing their new and erroneous genitive interpretation on sentences with the plurals (as in (6)) as well, which were not ambiguous at all, as the singulars had been (where the suffix *-n* might be seen as either ‘accusative singular’ or ‘genitive singular’), resulting in a restructuring of the grammar. However, this view is simply not available for many kinds of syntactic change where after the change the original construction still remains grammatical and unchanged alongside the innovative construction that the change is based on; the development of the new Finnish postposition (above) is such a case. In such changes, the original construction remains but in effect gains additional interpretations, that is, multiple analyses. In the development of the new Finnish postposition ((1) and (2) above), the source construction (in (1)) and the new postpositional construction based on it (in (2)) both survive; the same is true of the changes involving the Spanish reflexive (in (7) above) and the new passive construction derived from it (in (10–11)). In these changes, there is nothing which requires the assumption that the child language learner got it wrong which resulted in the grammar with a different construction (a new and different analysis of the old construction) which eliminates the original interpretation of the construction from the grammar. In these examples, there is nothing that requires child language acquisition to be the driving force behind the changes. Adult speakers could just as easily initiate the new analyses alongside the pre-existing ones. If these changes did begin with adults, their results would be part of the language which the next generation would hear around them, and consequently the children would simply learn these new, additional constructions together with any others that happen to be around as part of the grammar which they acquire. The argument that the language acquisition process need not be seen as the crucial locus of syntactic change challenges assumptions of the generative approach to syntactic change.

9.5 Grammaticalisation

Grammaticalisation is a topic of extensive current interest. The famous French Indo-Europeanist Antoine Meillet (1912: 132) introduced the term 'grammaticalisation' with the sense of 'the attribution of a grammatical character to a formerly independent word', where an independent word with independent meaning may develop into an auxiliary word and, if the process continues, it ends up as a grammatical marker or bound grammatical morpheme. Jerzy Kuryłowicz's (1965: 52) much-cited definition is: 'Grammaticalisation consists in the increase of the range of a morpheme advancing from a lexical to a grammatical or from a less grammatical to a more grammatical status'. This process is often characterised by a concurrent 'weakening' of both the meaning and the phonetic form of the word involved. In grammaticalisation, two related processes are the typical objects of investigations: (1) changes of the lexical-item-to-grammatical-morpheme sort, which can involve phonological reduction and exhibit change from independent word to clitic or affix; and (2) the discourse-structure-to-morphosyntactic-marking sort, the fixing of discourse strategies in syntactic and morphological structure (Traugott and Heine 1991: 2). In both kinds, grammaticalisation is typically associated with *semantic bleaching* and *phonological reduction* (to which we return below). Thus, Heine and Reh (1984: 15) define grammaticalisation as 'an evolution whereby linguistic units lose in semantic complexity, pragmatic significance, syntactic freedom, and phonetic substance'.

A frequently cited example is English *will*, which originally meant 'want', as its German cognate, *will* '(he/she) wants', still does. We can see remnants of the former 'want' meaning in such things as *have the will* [= desire], *if you will* [= if you want to] and *good will* [= wishes, desires]. English *will* became semantically bleached (lost its sense of 'want') and was grammaticalised as a 'future' marker. Grammaticalised forms are also often associated with 'phonetic erosion' (reduction of fuller forms to phonologically shorter ones). In this example, grammaticalised *will* 'future' can also be reduced in form, as in contractions such as *I'll*, *she'll*, *my dog'll do it*, and so on. Meillet presented a parallel example in Greek of the grammaticalisation of a verb 'to want' as a future marker, though its history is more complex than the change in English and is coupled with the loss of infinitives in Greek. Modern Greek *tha* 'future marker' began life as the Classical Greek main verb *thélei* 'want'. Greek lost its original infinitive construction and replaced it with a subordinate clause construction: *thélō hina gráphō* 'I want to write' [literally 'I want that I write'], *thélei hina grápheí* 'he/she wants

to write' ['he/she wants that he/she writes']. Though *thélei* continued as a main verb meaning 'want', it also came to mean 'will' (future), so that *thélō hina gráphō*, for example, could mean either 'I want to write' or 'I will write'. Later, the 'future' became restricted to the 'third person' form only, /θeli/ (from *thélei*), and eventually the combination of /θeli hina/ changed to /θa/, going through the steps: /θeli hina/ > /θeli na/ > /θe na/ > /θa na/ > /θa/, giving Modern Greek /θa yráfo/ 'I will write' (Joseph 1990). Another example is the frequent grammaticalisation of lexical 'go' to 'future', as with English (*be*) *going to* which originally referred only to the verb of motion, but then acquired a sense of 'future'/'future intention', which can be reduced phonologically to *gonna* in spoken language.

9.5.1 Examples of typical grammaticalisation changes

It may be helpful to mention some of the sorts of grammaticalisation changes, and the pathways which they typically take, that are seen to recur with some frequency in languages around the world.

- (1) Auxiliary < main verb.
- (2) Case suffixes < postpositions.
- (3) Case marking < serial verbs.
- (4) Causatives < causal verb ('make, have, get, cause, force') + clause with another verb.
- (5) Complementiser/subordinate conjunction < 'say'.
- (6) Coordinate conjunction ('and') < 'with'.
- (7) Copula ('to be') < positional verbs 'stand', 'sit' or 'give', 'exist' (Spanish *estar* 'to be' < Latin *stare* 'to stand', Spanish *ser* 'to be'; Quechua dialects *tiya-* 'to be' < **tiya-* 'to sit').
- (8) Dative case marker < 'give'.
- (9) Definite article < demonstrative pronoun.
- (10) Direct object case markers < locatives or prepositions (for example, a dative marker has become an accusative marker in Spanish, Kwa, Bemba and so on).
- (11) Durative, habitual, iterative < 'stay'; durative aspect < 'remain, stay, keep, sit'.
- (12) Ergative < passive (only one of several sources of ergative marking).
- (13) Existential/presentational constructions < 'have, be' (often with no inflection or only third person present inflection allowed), or < locative pronoun (Spanish *hay* < *haber* 'to have'; French *il y a* < *y* 'there' + *a* 'has'; English *there is/are*).

- (14) Future < 'want, have, go, come'; adverbs ('quickly, tomorrow, then, afterwards').
- (15) Grammatical gender < noun (masculine < 'man, male, boy'; feminine < 'woman, female, girl').
- (16) Impersonal/agentless verb forms: the following constructions are interrelated in many languages, and changes frequently go from one to another among these, though directionality is not strongly determined in most cases: reflexive ~ reciprocal ~ spontaneous/automatically occurring ~ potential ~ honorific ~ plural ~ detransitivising constructions ~ middle/medio-passive/pseudo-passive ~ passive ~ defocusing ~ non-agent topicalisation ~ impersonal verb ~ first person plural imperative/hortatory ~ causative ~ transitive (for example, 'John had/got his car stolen') ~ stative/resultative ~ perfect ~ ergative. A directionality is frequently attested in which reflexive > reciprocal > passive > impersonal (where reflexive > passive, or reflexive > impersonal are possible and occur with frequency).
- (17) Indefinite article < 'one'.
- (18) Indefinite pronoun < 'person, man, body, thing'; 'one'; 'you'; 'they'.
- (19) Locative constructions < body-part terms.
- (20) Negative < negative intensifiers (for example, French *ne pas*, originally 'not a step' where *pas* was a negative intensifier much like English *not a bit* is today; similar changes are attested in many languages).
- (21) Quotative < 'say'.
- (22) Perfect(ive) < 'finish', 'complete', 'have'.
- (23) Preposition/postpositions < verb (preposition < VO; postposition < OV).
- (24) Progressive < locative + non-finite verb (English, for example, *is hunting* < *is a-hunting* < *is at hunting*; Pennsylvania German, Cologne German *ist am schreiben* [is on.the to.write] 'is writing').
- (25) Progressive/habitual < durative verbs ('keep'), 'do', copula, positional verb.
- (26) Reflexive pronoun < some body-part noun ('body, head, belly, person') + possessive.
- (27) Relative pronouns < *wh*-question words/interrogative pronouns.
- (28) Relative clause markers < demonstrative pronouns.
- (29) Third person pronoun < demonstrative.
- (30) *Wh*-questions < cleft or pseudo-cleft.

These are just a few of the many. Also, these are not the only paths by which many of these elements can develop. (For actual examples of these and others, see Campbell and Harris 1995, Heine and Reh 1984, and Hopper and Traugott 1993.)

9.5.2 The status of grammaticalisation

Some argue that grammaticalisation has no independent status of its own, that there is nothing special or unique about it, that it merely involves other kinds of linguistic changes which are well understood and not inherently connected with grammaticalisation: sound change, semantic change and reanalysis. It is important to understand the basis for this challenge to grammaticalisation.

Most scholars agree that grammaticalisation is not a mechanism of change in its own right, but relies on the other mechanisms, primarily on reanalysis, but also sometimes on extension and borrowing. There are, however, many reanalyses which do not involve grammaticalisation, for example those involving word-order changes, affixes becoming independent words (which is rare, but a number of examples are known from various languages), changes from one syntactic structure to another, and so on – that is, any reanalysis which does not involve lexical items shifting towards having a more grammatical status or discourse structure becoming more fixed morphosyntactically.

That grammaticalisation is often associated with ‘semantic bleaching’ (also called *fading*, *weakening*) should perhaps not be seen so much as a special attribute of grammaticalisation as just regular semantic change in action (see Chapter 10). Semantic bleaching in grammaticalisation can hardly be seen as very remarkable, since it is essentially part of the definition of grammaticalisation, a shift from more lexical meaning to more grammatical content. The types of semantic change involved in grammaticalisation are primarily narrowing, sometimes coupled with metaphor, metonymy, and others (see Chapter 10). The emphasis on semantic loss or weakening is perhaps unwarranted, however, since in the process of grammaticalisation forms also take on new meanings, such as ‘future’ in the case of *will* and *gonna*, and it is not necessarily the case that any lexical meaning is lost, since often the source of the grammaticalisation remains in the language with its former meaning alongside the new grammaticalised form, as *be going to* as the original meaning of directional verb has in English alongside the new ‘future’ meaning acquired in the grammaticalisation. The semantic bleaching (and the semantic change in general) in grammaticalisation can in no way be considered independent of semantic change in general.

The phonological reduction ('erosion' of form) which many associate with grammaticalisation is also best not seen as unique to grammaticalisation, but as normal phonological change. Phonological reduction processes apply to items of the appropriate phonological character generally in a language, not just to certain items which happen to be involved in processes of grammaticalisation. Reduction often follows grammaticalisation because it is at that stage that the conditions favourable to changes of phonological reduction first come about, for example where the forms which get reduced no longer have an independent lexical meaning and hence come to be in relatively unstressed positions.

In short, grammaticalisations involve reanalysis, but reanalysis is a much more powerful mechanism of change and is by no means limited to nor coextensive with grammaticalisation. Sound change and semantic change apply to all sorts of things in addition to grammaticalisations. For this reason, many find grammaticalisation derivative, perhaps an interesting intersection of these various sorts of change, but with no special status of its own. (For general treatments of grammaticalisation, see C. Lehmann 1995, Hopper and Traugott 1993, and Traugott and Heine 1991).

9.6 Syntactic Reconstruction

Opinions are sharply divided concerning whether syntax is reconstructible by the comparative method. Nevertheless, the evidence available for comparison is often sufficient for successful reconstruction of many aspects of the syntax of a proto-language. To understand why there has been doubt about reconstruction of syntax and to see the real potential which we have for successful reconstruction in this area, we need to look at some of the obstacles to such reconstruction that are sometimes mentioned and to ways of surmounting the difficulties which they raise. Following this, we will consider some beneficial things which can help in syntactic reconstruction.

9.6.1 Reanalysis as an obstacle to reconstruction

Instances of traditional analogy sometimes pose obstacles in phonological and lexical reconstruction. Reanalysis in syntactic change is like analogy, and cases of reanalysis can make syntactic reconstruction difficult. However, in instances where analogy changes the form in one language so that it does not fit those of the related languages with which it is compared, we seek an explanation for the non-fitting form, and often

we find the analogical reformation which caused the form to deviate, as in the following cognate set from Germanic:

English	German	Gothic	Old Norse
<i>adder</i>	<i>natter</i>	<i>nadr-</i>	<i>naðra</i> 'adder'/'snake'

The weight of the evidence in German, Gothic and Old Norse suggests an initial **n-* in the proto-form, and this bids us seek an explanation for why no reflex of this *n-* is seen in the English cognate. In seeking an explanation, we eventually discover that the pattern of the English indefinite article with *a* before words beginning in a consonant (as *a cousin*) and *an* before vowel-initial words (*an aunt*) suggests analogical reinterpretation, from *a #nadder* to *an #adder* (compare Old English *næddre* 'snake'). In a situation such as this one, the analogical change is not devastating to lexical reconstruction, and it is precisely the comparative method and the evidence from the other languages which helps us to unravel the complication. We reconstruct initial **n-* and posit an analogical change to account for the deviance of the English cognate.

Using the same procedure, in many instances where one of the languages being compared has undergone reanalysis in some particular construction, we can discover the reanalysis and explain it so that it no longer prevents us from reconstructing the syntactic pattern in question. Earlier in this chapter, we saw the example in which a Finnish participle construction was reanalysed so that the noun that had originally been an accusative direct object of the main verb (as in (3) and (5)) came to be interpreted as the genitive subject of the participle (as in (4b) and (6)). If we compare cognate constructions among the Balto-Finnic languages, which include Finnish and its close relatives, we soon discover that Finnish stands out as not fitting the pattern of the other languages, as seen in the following examples:

(24a) *Finnish*: näin häne-n tule-van [genitive]
 I.saw he-Gen come-Part
 'I saw him coming/that he comes'

(24b) *Estonian*: nägin te-da tule-va-t [accusative]
 I.saw he-Acc come-Part-Acc
 'I saw him coming/that he comes'

(24c) *Vote*: näin me:s-sä tuļə-va-a te:tä mö [accusative]
 I.saw man.Acc come-Part-Acc street along
 'I saw a man coming/who comes along the street'

Compare *Finnish*: näin miehe-n tule-van tietä pitkin
[genitive]
I.saw man-Gen come-Part road along
(same meaning)

(24d) *Lapp*: son oia'dna boc'cu-i-d vuol'-ga-m [accusative]
he see reindeer-Pl-Acc leave-Past.Part-Acc
'he sees that the reindeer have left'

Compare *Finnish*: hän näkee poro-j-en lähte-neen
[genitive]
he sees reindeer-Pl-Gen leave-Past.Part

The cognate constructions in Balto-Finnic languages, except for Finnish, present the noun phrase which plays the role of the subject of the subordinate clause syntactically as a direct object in accusative case of the main verb, not as a genitive subject of the participle, as in Finnish. The difference in Finnish demands an explanation. In seeking an explanation, we soon discover that the accusative singular and genitive singular cases are both signalled by *-n*, allowing for multiple interpretations. Given this and the difference between Finnish and the other languages with respect to this construction, we encounter little difficulty in determining that Finnish has undergone a reanalysis and does not reflect the original form. We reconstruct the construction as reflected in the other Balto-Finnic languages, with the noun phrase as accusative object of the main verb, and we write out the changes of reanalysis and extension that have caused Finnish to depart from this structure.

9.6.2 Borrowing as an obstacle to syntactic reconstruction

Just as borrowing can complicate lexical reconstruction, it can be a serious obstacle to syntactic reconstruction as well. However, the techniques for identifying borrowing (in Chapter 3) can often help to identify syntactic borrowing and thus get beyond this obstacle. For example, a comparison of the words for 'mother' across Finno-Ugric languages reveals reflexes of **ema* 'mother' in most of them; however, Finnish has *äiti* 'mother' instead, and this difference turns out to be the result of borrowing. Closer investigation reveals that Finnish did indeed borrow this word from Germanic 'mother' (Gothic *aipei* [ēθī], Old High German *eidī*, Proto-Germanic **aiθī*). Since it is borrowed, it is not a legitimate witness of what the form in the proto-language may have been; to determine that, we rely rather on the information available from the other languages which did not replace the original cognate word through

borrowing. In syntactic reconstruction, we do the same thing. For example, in most varieties of Finnish, verbal constructions involving obligation require the subject to be in the genitive case and the verb to be in a third person form (that is, the verb does not agree with this genitive subject), as in the following example from Standard Finnish (Gen = genitive, Sg = Singular, Nom = nominative, Pl = Plural, Part = Participle):

- (25a) minu-n täyty-y mennä
I-Gen must-3rd.Person.Present to.go
'I must go'
(25b) minu-n pitä-ä mennä
I-Gen must-3rd.Sg.Present to.go

However, Western Finnish lacks this obligation construction; rather, it has borrowed its construction from neighbouring Swedish, now with a subject in nominative case and with the verb agreeing in person with this subject, as in the following examples:

Western Finnish:

- (25c) mä täydy-n mennä
I-Nom must-I to.go
'I must go'
(25d) mä pidä-n mennä
I-Nom must-I to.go
'I must go'

When we compare the many regional varieties of Finnish (in (26–27)), Western Finnish (illustrated in (25c–d)), with its nominative subjects and verb agreement, stands out as inconsistent with the others, which take genitive subjects and no verb agreement. This is illustrated here with an example from just two of the many dialects, Vermland (in Sweden) and Koprina (Inkeri, former Soviet Union):

Vermland:

- (26a) nii-j-en ois pitän-nä lahata oamuše-lla
these-Pl-Gen would.have must-Past.Part to.slaughter
morning-on
'they should have slaughtered in the morning'

Compare *Standard Finnish*:

- (26b) nii-den olisi pitä-nyt lahdata aamu-lla
these-Pl.Gen would.have must-Past.Part to.slaughter
morning-on

Inkeri (Kopriva):

- (27a) sulhase-n pit¹ antaa kolme ruplaa pojil viinarahaa
bridegroom-Gen had to.give three roubles boys.to
wine.money.of
'The bridegroom had (was supposed) to give three roubles
of drinking money to the boys'

Compare *Standard Finnish*:

- (27b) sulhase-n piti antaa pojille kolme ruplaa viinarahaa
bridegroom-Gen had to.give three roubles boys.to
wine.money.of

Given that all other varieties of Finnish have the genitive subject and non-agreeing third person verb form in verbal obligation constructions, we reconstruct this pattern and we explain the Western Finnish one with nominative subjects and verbs that agree in person with these as a later change due to borrowing from the Swedish model. The evidence from other varieties shows that Western Finnish is inconsistent, and further research reveals that it is due to borrowing. Therefore, in spite of the borrowing in this case, we are able successfully to reconstruct the older stage of the language, with genitive subjects and non-agreeing verbs, based on the weight of the comparative evidence from the other varieties compared.

In summary, there are many obstacles to reconstruction of syntax, but they are largely the same sort that we encounter in phonological and lexical reconstruction, and often it is possible to see beyond the obstacles. Let us turn now to some considerations which prove beneficial in efforts to reconstruct syntax.

9.6.3 Morphological reconstruction as clues to syntactic reconstruction

Morphology and syntax are so interrelated that to the extent that morphology can be reconstructed, many aspects of the proto-syntax in many cases will automatically become clear. The techniques used for lexical reconstruction (Chapter 5), based on the sequence of sound correspondences in cognate words, can frequently be used to reconstruct polymorphemic words. Morphological analysis of these reconstructed proto-words provides the proto-morphology free, so to speak. An example of this sort is seen in Table 9.2, where some polymorphemic cognate words for the paradigm for the verb 'to read' in Balto-Finnic are compared. With just these few compared words, we see indications of such aspects of Proto-Balto-Finnic morphosyntax as tenses and aspects,

passive, embedded clauses with the third infinitive, and the participle (which is also used in relative clauses). This is enough to illustrate how the technique of reconstructing the proto-morphology can help us to obtain aspects of the proto-syntax.

TABLE 9.2: Balto-Finnic comparative verbal morphology

<i>Finnish</i>	<i>Vote</i>	<i>Estonian</i>	<i>Proto-Balto-Finnic</i>
(1) luen ‘I read (indicative)’	lugən	loen	*luɣe-n
(2) olen luku ⁿ ute ‘I have read’ (first person perfect indicative)	ələn lukənnu	olen lügenud	*ole-n luke-nut
(3) luettiin ‘(it) was read’ (past passive)	lugəti:	loeti [loetti]	*luɣe-ttiin
(4) lukemaan ‘third infinitive’	lukəma:	lugema [lukema]	*luke-ma-han
(5) lukeva ‘reading’ (present active participle, basis of relative clauses)	lukəva	lugev [lukev]	*luke-va?

The ‘third infinitive’ is an infinitival form (formerly nominal) used especially with verbs of motion.

While in some situations this technique can recover a considerable amount of the proto-syntax, it works less well where the cognate grammatical morphemes have undergone functional or positional shifts or have been lost due to other changes in the languages. Successful reconstruction here, as with phonological and lexical reconstruction, depends on the nature of the evidence preserved in the languages being compared. For example, when we compare the modern Romance languages, we are able to recover much less of the original morphology because so much has been lost in the various languages. This being the case, the technique of morphological reconstruction which worked well for aspects of Proto-Balto-Finnic syntax provides less for Proto-Romance syntax.

9.6.4 Directionality

Just as knowing the characteristic direction of change in various sound changes provides clues to the best reconstruction in phonology, the directionality of a number of grammatical changes is also known, and this provides clues for the best grammatical reconstruction. An example of this is the fact that postpositions frequently become attached to roots and lose their independent status, becoming case suffixes; however,

case suffixes hardly ever become independent postpositions. With the directionality Postposition > Case in mind, consider the comparisons of forms meaning 'with' in Table 9.3, where Postp = Postposition; Com = Comitative case ('with'). In this example, given the known directionality of Postposition > Case, it is incumbent upon us to reconstruct the postposition as original and to postulate that the comitative case endings which are the cognates in Veps and Estonian are due to a grammatical change, 'postposition' > 'comitative case'.

TABLE 9.3: Comparison of Balto-Finnic 'with' forms

<i>Finnish</i>	<i>Karelian</i>	<i>Veps</i>	<i>Estonian</i>	<i>Vote</i>	<i>Livonian</i>	<i>Proto-Balto-Finnic</i>
kanssa (Postp)	kanssa (Postp)	-ka (Com)	-ga [-ka] (Com)	ka:sa (Postp)	ka:zu (Postp)	*kans(s)a?

9.6.5 Archaisms

An *archaism* (also often called *relic*) is something characteristic of the language of the past, a vestige, which survives chiefly in specialised uses. Archaisms are in some way exceptional or marginal to the language in which they are found. They are most commonly preserved in certain kinds of language such as in proverbs, folk poetry, folk ballads, legal documents, prayers and religious texts, very formal genres or stylistic variants, and so on. A straightforward example is English *pease* for 'pea', an archaism preserved in the nursery rhyme 'Pease porridge hot, pease porridge cold, pease porridge in the pot nine days old'; it reflects the older *pease* before it was changed by analogical back formation to *pea* (mentioned in Chapter 4). As exceptions, archaisms have somehow been bypassed or exempted from the general changes which the language has undergone. Grammatical archaisms are highly favoured in syntactic reconstruction – some scholars believe them to be the single most useful source of evidence. Naturally, if we can tell what is archaic – by definition 'old' – it affords us extremely valuable information for historical reconstruction.

A difficulty with using archaisms (relics) for reconstruction is that it can be difficult to tell whether we are dealing with a legitimate archaism or something that is exceptional for other reasons but is not old. Another difficulty comes from the frequent situation in which we easily identify exceptions, but where the archaism provides too little information for reliable reconstruction. For example, in early Latin, adjectives and nouns occurred in the order Adjective–Noun; this gradually changed and today

the most neutral order in all the Romance languages is Noun–Adjective. In spite of the change to Noun–Adjective in the contemporary Romance languages, the older order Adjective–Noun remains with some of the most frequently occurring adjectives. When we attempt to reconstruct the order of adjective and noun in Proto-Romance, we compare the correspondences in the neutral order (Noun–Adjective), but we also note the exceptional order (Adjective–Noun), as in Table 9.4. However, the facts summarised in Table 9.4, including the exceptional (archaic) word order, are not sufficient to permit us to reconstruct **Adjective–Noun* as the neutral order in Proto-Romance with any confidence.

TABLE 9.4: Comparisons of Romance word orders with adjective and noun

	<i>Spanish</i>	<i>Portuguese</i>	<i>French</i>	<i>Italian</i>	<i>Romanian</i>
Neutral order: Noun–Adj	Noun–Adj	Noun–Adj	Noun–Adj	Noun–Adj	Noun–Adj
Exceptional order: Adj–Noun	Adj–Noun	Adj–Noun	Adj–Noun	Adj–Noun	Adj–Noun

Let us look at a slightly more complicated example. As we saw above, Proto-Balto-Finnic had a participle construction in which the logical subject of the participial verb was originally a direct object (in accusative case, as in (3) and (5)) of the main verb, but this was reanalysed in Finnish so that the noun phrase came to be interpreted as the subject (in genitive case) of the participle (as in (4b) and (6)). This reanalysis was made possible by the homophony of the accusative and genitive singular case endings, both *-n*. Finnish archaisms preserve evidence of the construction before the change with the accusative. For example, in folk poems there are instances of relics such as (28a) (Acc = ‘accusative’, Pass = ‘passive’, Pl = ‘plural’, Part = ‘participle’, Gen = ‘genitive’):

- (28a) kuul-tihin kala-t kute-van, lohenpursto-t loiskutta-van
 hear-Past.Pass fish-Acc.Pl spawn-Part salmon.tail-Acc.Pl
 splash-Part
 ‘the fish were heard spawning, salmon-tails splashing’

Instead of the accusative plural of ‘fish’ (*kala-t*) and ‘salmon-tails’ (*lohenpursto-t*), modern Standard Finnish has the genitive plural, as in (28b):

- (28b) kuul-tiin kalo-j-en kute-van, lohenpursto-j-en loiskutta-van
 hear-Past.Pass fish-Pl.Gen spawn-Part salmon.tail-Pl.Gen
 splash-Part

The relic contained in this folk poem provides additional support for the reconstruction above with the accusative pattern which was securely established on the basis of comparative evidence from the related languages. However, if other supporting evidence from related languages were not available, this archaism alone would be insufficient for a reliable reconstruction. We would not be certain whether this was in fact an archaism (and thus evidence of a former state of the language) or perhaps just some exception to the normal pattern for expressive or poetic purposes.

9.6.6 What can be successfully reconstructed

Another way of appreciating the possibilities for successful syntactic reconstruction is by evaluating the results of attempts to reconstruct the syntax of language families. The application of the comparative method to languages of the Uralic family reveals a proto-language with the following grammatical features. There were three contrasting grammatical numbers, 'dual' (*-kə (-)), 'plural' (*-t and *-j) and 'singular' (∅). Direct objects of finite verbs were marked by the 'accusative' case (*-m), but the objects of an imperative verb bore no accusative marker. Case and definiteness were related; the genitive and accusative cases implied definiteness, while indefinite nouns took no marking (that is, in form they were not distinct from the nominative case). The 'genitive' case marked not only the possessor but also served to signal an adjective attribute before its head noun. Proto-Uralic verb tenses included: *-j 'past', *-mə 'past (perfect)', *-pA 'present' and *-śA 'past' ('A' denotes vowel harmony with the attached root). There was a negative verb, *e-. Sentences minimally had a nominal subject and a predicate (verbal or nominal); the subject could be signalled by personal pronominal suffixes attached to the predicate. The predicate agreed with its subject (in person and number); there was no other agreement. The predicate of embedded clauses was in form a verbal noun, where personal possessive pronominal suffixes were used to signal its subject. The role of the embedded clause in the overall sentence was shown by case markings on the verbal noun (a nominalisation) which was the core of the embedded clause. Proto-Uralic had no overt conjunctions or relative pronouns; embedded verbal nouns, nominalisations, were the only means of showing subordination. In brief, the application of the comparative method to the reconstruction of Proto-Uralic morphosyntax has proven quite successful and this case shows that, at least in some instances, we are capable of syntactic reconstruction (Janhunen 1982; Campbell 1990a).

In summary, there are many obstacles to successful syntactic reconstruction, but many of these are like the obstacles encountered in phonological and lexical reconstruction, and in many instances, using normal historical linguistic techniques (recognition of borrowing, analogy and so on), we can get beyond the obstacles through the weight of the comparative evidence from related languages. Reliance on the known directionality of many grammatical changes helps, and reconstructed morphology and syntactic archaisms can provide very valuable information. In short, while syntactic reconstruction can be very difficult, it is clearly possible.

9.7 Exercises

Exercise 9.1 Syntactic change in Estonian

Compare the sentences in this exercise, which represent different stages of Estonian (a Finno-Ugric language); explain what changed and identify the kinds of changes or the mechanisms involved.

Stage I: Estonian had two alternative constructions for subordinate clauses involving the complements of speech-act and mental-state main verbs, illustrated in (1) and (2) (Gen = 'genitive', Nom = 'nominative', Part = 'participle', Pres = 'present indicative'):

- (1) sai kuulda, et seal üks mees ela-b
got to.hear that there one.Nom man.Nom live-3rd.Pres
'he/she came to hear that a man lives there'
- (2) sai kuulda seal ühe mehe ela-vat
got to.hear there one.Gen man.Gen live-Part
(same meaning as (1))

Stage II: (1) and (2) remain possible, but the construction in (3) also became possible (note that 'participle' became 'indirect'):

- (3) sai kuulda, (et) seal üks mees ela-vat
got to.hear (that) there one.Nom man.Nom live-Indirect
(3a) 'he/she came to hear that they say a man lives there'/
(3b) 'he/she came to hear that reportedly a man lives there'

Stage III: (1), (2) and (3) are all possible now, but forms formerly found only in subordinate clauses, as in (3), came to be found also in main clauses, as in (4):

- (4) ta tege-vat töö-d
he.Nom do-Indirect work-Partitive
'They say he is working' / 'Reportedly he is working'

Exercise 9.2 The development of perfect auxiliaries in Spanish

In the following, the stages in the development of perfect auxiliaries in Spanish from its Latin origins are described and illustrated. On the basis of this information, compare the stages and attempt to determine the changes which took place and to identify the kinds of changes or the mechanisms involved. (Fem = 'feminine', Masc = 'masculine', Part = 'participle', Pl = 'plural', PPP = 'past passive participle').

Stage I: Latin used expressions with 'past passive participle' (PPP) in combination with the verbs *tenēre* 'hold', *habēre* 'keep, hold' and others meaning 'hold, possess, own', to represent something as ready or kept in a completed condition, as in (1):

- (1) *Metuō enim nē ibi vos habeam fatigā-tō-s* (Late Latin)
fear.I truly indeed there you have.I fatigue-PPP.Masc-Pl
'I fear that I have you tired'/'that I have tired you'/'that you are tired'

This construction with 'past passive participle' was quite limited in its occurrence in Classical Latin, but became associated with 'perfect' aspect in combination with the development of *habēre* as an auxiliary. Originally this construction had *habēre* 'keep, hold, have' (a main verb) with the 'past passive participle' form as an adjective which modified the direct object (both the logical and surface object) of this main verb (*habēre*), which agreed in number and gender with this object as its head, as in (2):

- (2) [*habeō*] [*litter-ā-s scrip-t-ā-s*]
have.I letter-Fem-Pl.Acc write-PPP-Fem-Pl.Acc
'I have written letters' = 'I have letters which are written'

Stage II: In Old Spanish, *haber* (spelled *aver* in Old Spanish, from Latin *habēre* 'to have, hold') in such constructions began to lose its possessive meaning and to consolidate the auxiliary function, resulting in compound tenses, but still with agreement in gender and number between the participle and the direct object until the mid-sixteenth century, as illustrated in (3) (where the *-o-s* 'masculine plural' of *hechos* 'made' agrees with the *-o-s* 'masculine plural' of *enemigos* 'enemies'):

- (3) *Los había . . . he-ch-o-s enemig-o-s* de estotros (Hernán Cortés)
Them had make-Past.Part-Masc-Pl enemy-Masc-Pl of these.others
'He had made enemies of these others'

Stage III: Gradually, the *haber* + PPP construction changed, eliminating the requirement that 'past passive participle' must agree in number

and gender with the noun which it modified, losing its passive sense, with the verb *haber* becoming the 'perfect auxiliary', and Modern Spanish no longer permits agreement between the participle and the object, as in (4):

- (4) Hemos escri-to cart-a-s
 have.we write-Past.Part letter-Fem-Pl
 'We have written letters'

The adjectival participle source with number and gender agreement still survives in other contexts (but not in the perfect construction with forms of the verb *haber*), for example:

- (5) Tenemos cart-a-s escri-t-a-s en tint-a roj-a
 have.we letter-Fem-Pl write-Past.Part-Fem-Pl in ink-Fem.Sg
 red-Fem.Sg
 'We have letters written in red ink'.

In the series of changes described here, the meaning is no longer 'X possesses that which has been done', but 'X has done', and is accompanied by the structural change of *haber* from main verb to an auxiliary.

Stage IV: Additional changes in connection with the new 'perfect' construction also came about. First, the verb *ser* 'to be' had formerly also been a perfect auxiliary used with certain intransitive verbs (especially verbs of motion) (as in (6a) and (7a)), but this was replaced by the auxiliary *haber*, as seen in the Modern Spanish equivalents in (6b) and (7b):

- | | |
|---------------------|---|
| (6a) Old Spanish | ella <i>es</i> naci-d-a
she is born-Past.Part-Fem |
| (6b) Modern Spanish | ella <i>ha</i> naci-d-o
she has born-Past.Part
'she has been born' |
| (7a) Old Spanish | ellos <i>son</i> i-d-o-s
they are go-Past.Part-Masc-Pl |
| (7b) Modern Spanish | ellos <i>han</i> i-d-o
they have go-Past.Part
'they have gone' (Lapesa 1981: 212) |

Second, the word order changed, placing the participle closer to the auxiliary, for example from the equivalent of 'I have a letter written' (as in (2)) to 'I have written a letter' (as in (4)).

Semantic Change and Lexical Change

They that dally [= converse idly] nicely [= foolishly] with words may
quickly make them wanton [= unmanageable].

(Shakespeare, *Twelfth Night* III, 1)

10.1 Introduction

Changes in meaning and vocabulary excite people. Non-linguists are fascinated by why *bloody* and *bugger* are obscene in Britain and not in America – the words don't even mean the same thing in the two places – and why *pissed* means 'angry' in the USA but 'drunk' in the UK, and why *pissed* is so much less obscene and more tolerated than it was a generation ago in both countries. People want to know how words such as *ditz*, *dork*, *dweeb*, *geek*, *nerd*, *twit*, *wimp*, *wuss* and *yutz* get added to the language so fast and why their meanings seem to change so rapidly, and whatever happened to the *groovy* of late 1960s love songs, anyway? Some find a certain delight (some would say a twisted satisfaction) in the seeming irony in the semantic history of *to bless*, from Old English *blēdsian* (earlier *blōdsian*), which originally meant 'to mark with blood' in an act of consecration in pagan sacrifice. With umlaut in mind, it is easy to see the connection between *blood* and the *blēd-* part of *blēdsian* (just think *to bleed* to see the connection more clearly). Some are charmed (perhaps perversely so) by a favourite example of handbooks, the story behind *cretin*. English *cretin* is borrowed from French *crétin* 'stupid', which comes, to the surprise and delight of etymology-lovers, ultimately from Latin *christianum* 'Christian'. In Romance languages,

the term for 'Christian' was used also for 'human being' to distinguish people from beasts; the semantic shift which gives the modern sense of *cretin* 'a stupid person' apparently came about in Swiss French dialects especially in reference to a class of dwarves and physically deformed idiots in certain valleys of the Alps, used euphemistically to mean that even these beings were human, and from this came the semantic shift from 'Christian' to 'idiot'. Those who learn other languages often ask how true cognates can come to have such different meanings in related languages, as in the English-German cognates *town/Zaun* 'fence', *timber/Zimmer* 'room', *bone/Bein* 'leg', *write/reissen* 'to tear, rip'. They ask why a seemingly innocent French word such as *baiser*, which the dictionary says means 'to kiss', has changed its meaning to 'to copulate' with no warning to save the unsuspecting language learner from embarrassment. Vocabulary change can be a matter of alarm and deep emotional concern. This is evidenced by the creation of language academies and the appointment of language commissions to protect the purity of languages such as French and Spanish, and as seen, for example, in letters to the press in Canada, Britain, New Zealand and South Africa which denounce on the one hand the invidious creeping encroachment of Americanisms in vocabulary and on the other hand decry the degeneration of students' all-too-limited vocabulary into nothing but slang (so they claim), holding up famous American and British writers as models of how we all should talk in order to be considered proper human beings who uphold our moral and linguistic obligations to the language. This chapter is about what linguists think about changes in meaning and in vocabulary, the topic which non-linguists find so exciting and alarming.

In linguistics (also in anthropology, philosophy and psychology), there are many approaches to semantics, the study of meaning. Unfortunately, these various theoretical approaches to semantics and the traditional historical linguistic treatments of change in meaning have typically had little in common, though clearly we would be in a better position to explain semantic change if we could base our understanding of change in meaning on a solid theory of semantics. Some recent approaches do attempt, with limited success, to reconcile the differences. Given the importance of semantic change, this chapter presents both a traditional classification of kinds of semantic changes and some more recent thinking concerning regularities and general tendencies in meaning change. Semantic change deals with change in meaning, understood to be a change in the concepts associated with a word, and has nothing to do with change in the phonetic form of the word. However, there are also aspects of lexical change which do not fall under this definition of semantic change, and

we will look into them as well. Note that some aspects of semantic change and vocabulary change have already come up in previous chapters, under analogy in Chapter 4, calques (semantic borrowing) in Chapter 3, and grammaticalisation in Chapter 9.

10.2 Traditional Considerations

Work in semantic change has been almost exclusively concerned with lexical semantics (change in the meaning of individual words), and that is the focus in this chapter. Semantic change is mostly concerned with the meaning of individual lexical items, whereas much of semantic theory involves logical relations among items in longer strings. There are various classifications of types of semantic change, and there is nothing special about the classification presented here. Some of the categories overlap with others, and some are defined only vaguely, meaning that some instances of semantic change will fit more than one type while others may fit none comfortably. It is probably best to consider this classification as offering a sort of broad scheme for organising kinds of semantic change, but with no pretensions of being particularly complete or adequate, only (it is hoped) useful.

10.2.1 Widening (generalisation, extension, broadening)

In semantic changes involving widening, the range of meanings of a word increases so that the word can be used in more contexts than were appropriate for it before the change.

(1) *Dog*. English *dog* first appeared with the more specific meaning of 'a (specific) powerful breed of dog', which generalised to include all breeds or races of dogs.

(2) *Salary*. Latin *salārium* was a soldier's allotment of salt (based on Latin *sal* 'salt'), which then came to mean a soldier's wages in general, and then finally, as in English, wages in general, not just a soldier's pay.

(3) *Cupboard*. In Middle English times, *cupboard* meant 'a table ("board") upon which cups and other vessels were placed, a piece of furniture to display plates, a sideboard', whose meaning then became 'a closet or cabinet with shelves for keeping cups and dishes', and finally in America it changed to mean any 'small storage cabinet'. In parts of Canada, *cupboard* has been extended to mean also what others call a 'wardrobe' or 'clothes closet'. Spanish *armario* 'cupboard' was borrowed from Latin in the Middle Ages where it had to do with 'arms', 'weapons', and meant 'armoury'; later its meaning widened to include

present-day 'clothes closet, cupboard'. French *armoire* 'wardrobe, locker, cabinet' (also borrowed into English from French) has the same history.

(4) Spanish *caballero*, originally 'rider, horseman', expanded to include also 'gentleman, man of upper society' (since only men of means could afford to be riders of horses).

(5) Spanish *estar* 'to be' (especially 'to be in a location') < Latin *stāre* 'to stand'.

(6) Spanish *pájaro* 'bird' < Latin *passer* 'sparrow'.

(7) Finnish *raha* 'money' originally meant 'a fur-bearing animal' and its 'pelt'. The skins were an important means of exchange in the past, and *raha* came to mean 'skin used as medium of exchange'; when new means of exchange took the place of the old ones, *raha* shifted its meaning to 'money', its only meaning today (Ravila 1966: 105).

10.2.2 Narrowing (specialisation, restriction)

In semantic narrowing, the range of meanings is decreased so that a word can be used appropriately only in fewer contexts than it could before the change.

(1) *Meat* originally meant 'food' in general (as in the King James translation of the Bible) and later narrowed its meaning to 'meat' ('food of flesh'); this original meaning is behind compounds such as *sweet-meat* 'candy'. (Compare the Swedish cognate *mat* 'food').

(2) *Hound* 'a species of dog (long-eared hunting dog which follows its prey by scent)' comes from Old English *hund* 'dog' in general.

(3) *Wife* meant 'woman' in Old English times (as in the original sense of *midwife*, literally a 'with-woman'). It narrowed to mean 'woman of humble rank or of low employment, especially one selling commodities of various sorts'. The former meaning is preserved in *old wives' tales* and the second in *fishwife*. Finally it shifted to 'married woman, spouse'.

(4) *Deer* narrowed its sense from Old English *dēor* 'animal' (compare the German cognate *Tier* 'animal').

(5) *Fowl* 'bird (especially edible or domestic)' has narrowed its sense from Old English *fugol* which meant 'bird' in general (compare the German cognate *Vogel* 'bird').

(6) *Girl*, which meant 'child or young person of either sex' in Middle English times, narrowed its referent in Modern English to 'a female child, young woman'.

(7) *Starve* 'to suffer or perish from hunger' is from Old English *steorfan* 'to die'. (Compare the German cognate *sterben* 'to die').

(8) French *soldat* 'soldier' comes from *solder* 'to pay' and thus meant

'a paid person', a narrowing from 'any paid person' to 'someone in the military'.

(9) French *drapeau* 'flag' meant first 'the piece of cloth fastened to a staff' (derived from *drap* 'cloth, sheet'; compare English *drape*, borrowed from French).

(10) Spanish *rezar* 'to pray' < Old Spanish *rezar* 'to recite, say aloud' (from Latin *recitāre* 'to recite, say aloud', the source from which *recite* in English is borrowed).

As noted in Chapter 9, many examples of grammaticalisation involve semantic narrowing, from a broader lexical meaning to a narrower grammatical function.

10.2.3 Metaphor

Definitions of 'metaphor' (from Greek *metaphorā* 'transference') vary and are often vague; that is, it is often difficult to determine whether a given instance fits the definition or not. Metaphor involves understanding or experiencing one kind of thing in terms of another kind of thing thought somehow to be similar in some way. Metaphor in semantic change involves extensions in the meaning of a word that suggest a semantic similarity or connection between the new sense and the original one. A much-repeated example is English *bead*, now meaning 'small piece of (decorative) material pierced for threading on a line', which comes from Middle English *bede* 'prayer, prayer bead', which in Old English was *bed*, *beode* 'prayer' (compare the German equivalent *Gebet* 'prayer'). The semantic shift from 'prayer' to 'bead' came about through the metaphoric extension from the 'prayer', which was kept track of by the rosary bead, to the rosary bead itself, and then eventually to any 'bead', even including 'beads' of water. Frequently mentioned examples of metaphoric extensions involve expressions for 'to kill': *dispose of*, *do someone in*, *liquidate*, *terminate*, *take care of*, *eliminate* and others. In slang, there are many metaphoric changes for 'drunk' based on forms whose original meaning is associated with being 'damaged' in some way: *blasted*, *blitzed*, *bombed*, *hammered*, *obliterated*, *ripped*, *shredded*, *smashed*, *tattered*, *wasted* and many more. Another area of metaphor for 'drunk' involves being saturated with liquid: *pissed*, *sauced*, *sloshed*, *soaked*.

Other examples are:

(1) French *feuille* 'leaf, sheet of paper' < 'leaf (of plant)'; Spanish *hoja* 'leaf, sheet of paper' < 'leaf' (both from Latin *folia* 'leaves, plural of *folium* 'leaf').

Semantic Change and Lexical Change

(2) French *entendre* 'to hear' comes by metaphor from original 'to understand' (compare the Spanish cognate *entender* 'to understand').

(3) Spanish *sierra* 'saw' was applied by metaphor to 'mountain range'; now there is *sierra* 'saw' and *sierra* 'mountain range'.

(4) Spanish *pierna* 'leg' < Latin *perna* 'ham'.

(5) *root* (of plant) > 'root of plant, root of word, root in algebra, source'.

(6) French *fermer* 'to close' originally meant 'to fix, make firm or fast'. Spanish *firmary* 'to sign (with one's signature)' has the same source.

(7) Latin *captāre* 'to catch, to try to seize, to trap' became in French *chasser* 'to hunt, to chase, to drive away, to cause a hurried departure' (the source from which English *chase* is borrowed, which means both 'to go after, try to catch' and 'to drive (away)').

(8) French *chapeau* 'hat, bonnet' originally meant 'garland'.

(9) English *stud* 'good-looking, sexy man' of slang origin, derived by metaphor from *stud* 'a male animal (especially a horse) used for breeding'.

(10) English *chill* 'to relax, calm down' of slang origin came about by metaphoric extension of the original meaning of *chill* 'to cool'.

10.2.4 Metonymy

Metonymy (from Greek *metōnomia* 'transformation of the name') is a change in the meaning of a word so that it comes to include additional senses which were not originally present but which are closely associated with the word's original meaning, although the conceptual association between the old and new meanings may lack precision. Metonymic changes typically involve some contiguity in the real (non-linguistic) world. They involve shift in meaning from one thing to another that is present in the context (though being present may be a conceptual judgement call not necessarily immediately apparent to us before the change takes place). For example, English *tea* means, in addition to the drink, 'the evening meal' in many English-speaking locations. A much-repeated example is English *cheek* 'fleshy side of the face below the eye'; Old English *cēace* meant 'jaw, jawbone', which over time shifted to the sense of Modern English *cheek*. Some examples of metonymy are:

(1) French *jument* 'mare' < 'pack horse'.

(2) Spanish *cadere* 'hip' < 'buttocks' < ultimately Latin *cathedra* 'armchair'. (Compare the French cognate *chaise* 'chair', from earlier *chaire*.)

(3) Spanish *mejilla* 'cheek' < Latin *maxilla* 'jaw'.

(4) Spanish *plata* 'silver' has been extended to mean also 'money'.

(5) Spanish *acera* 'sidewalk' < Old Spanish *façera* 'façade, front of buildings on street or square'.

(6) Spanish *timbre* 'bell (as a telephone bell or doorbell), postage stamp' originally meant 'drum'; by metonymy this extended to include a 'clapperless bell' (struck on the outside with a hammer), then 'the sound made by this sort of bell', and then 'the sonorous quality of any instrument or of the voice', then 'tone' (of a sound); from the round shape of a bell, it also extended to mean 'helmet-shaped', then 'the crest of a helmet', 'the crest in heraldry' (the ornament place above the shield), and from this the meaning was extended to include 'the official mark stamped on papers', to 'the mark stamped by the post office upon letters', and finally to 'postage stamp'. (French *timbre* 'tone, postage stamp' has the same history of semantic changes; English *timbre* 'the distinctive quality of a sound' is borrowed from French.)

(7) French *sevrer* 'to wean' comes from Latin *sēparāre* 'to part, divide, separate' (that is, from 'to separate' in general to 'to separate from the mother's breast'). (English to *sever* 'to separate (by force, by cutting or tearing)' was borrowed from French *sevrer* before the semantic shift to 'to wean' had taken place.)

(8) English *flake* 'irresponsible person' of slang origin is by metonymy from the original meaning of *flake* 'a small, loose, flat bit' – 'flaking' is usually considered an unfortunate thing to happen to most things.

A common sort of metonymy is the use of the name of the place for a product characteristic of it, as in French *champagne* 'champagne', from the name of the region, *Champagne*. (For other examples, see section 10.4.2 below.)

10.2.5 Synecdoche

Synecdoche (from Greek *sunekdokhé* 'inclusion'), often considered a kind of metonymy, involves a part-to-whole relationship, where a term with more comprehensive meaning is used to refer to a less comprehensive meaning or vice versa; that is, a part (or quality) is used to refer to the whole, or the whole is used to refer to part, for example *hand*, which was extended to include also 'hired hand, employed worker'. Some common examples found in various languages are 'tongue' > 'language', 'sun' > 'day', 'moon' > 'month'.

(1) Spanish *boda* 'wedding' comes from Latin *vōta* 'marriage vows', where the term for part of the whole, namely the 'vows', came to signal the whole, in this case the 'wedding'.

Semantic Change and Lexical Change

(2) German *Bein* 'leg' originally meant 'bone' (cognate with English *bone*).

(3) French *tableau* 'picture, panel, board' < Latin *tabula* 'board' (compare English *table*, a loanword ultimately from this same source).

A special kind of synecdoche is *displacement* (also called *ellipsis*), where one word absorbs part or all of the meaning of another word with which it is linked in a phrasal constituent (usually Adjective–Noun), for example, *contact(s)* from *contact lens(es)* and *a capital* from *a capital city*, where the notion of 'city' has been absorbed into the word *capital* (English *capital* is a loan from French). (Some see this also as a kind of syntactic change.)

(1) French *succès* 'success' comes from *succès favorable* 'favourable issue, event' (derived from *succéder* 'to follow, transpire'; compare Latin *successus* 'advance, result', derived from *succedere* 'to follow, undergo, replace'). (French is the source of borrowed *success* in English.)

(2) French *journal* 'newspaper' is a displacement from *papier journal* 'daily paper' (*papier* 'paper' + *journal* 'daily'). In English, *a daily* (from *daily paper*) has the same meaning and has developed in the same way.

(3) Spanish *hermano* 'brother' < Latin *frāter germānus* 'brother of the same parent', where *germānus* 'of the same parent' was used in the sense of 'true, authentic' and eventually displaced the expected form from Latin *frāter* 'brother'.

(4) *sexual intercourse* > *intercourse*.

(5) French *foie* 'liver' and Spanish *higado* 'liver' < Latin *iecur ficatum* 'fig-stuffed liver' by ellipsis so that only the reflex of *ficatum* 'fig-stuffed' remains in the meaning 'liver'.

(6) Finnish *yskä* 'cough' comes from original *yskä tauti*, literally 'chest sickness', *yskä* 'breast, lap' + *tauti* 'sickness', where *yskä* now no longer has the connotation of 'breast, chest' (Ravila 1966: 106).

(7) An often-cited example is *private soldier* > *private*, where *private* after the change came to mean 'ordinary/regular soldier' (contrasted with 'officer'), taking on the meaning of the whole phrase.

10.2.6 Degeneration

In degeneration (often called *pejoration*), the sense of a word takes on a less positive, more negative evaluation in the minds of the users of the language – an increasingly negative value judgement. A famous, oft-cited example is English *knave* 'a rogue', from Old English *cnafa* 'a youth, child', which was extended to mean 'servant' and then ultimately to the modern sense of *knave* 'rogue, disreputable fellow' (compare the German cognate *Knabe* 'boy, lad'). Examples of the degeneration of

terms for women are well known and are often cited as examples in works dealing with social issues. For example, in colloquial German, *Weib* means 'ill-tempered woman' though in Standard German it just means 'woman' (contrast the English cognate *wife*, which formerly meant 'woman'). A great many of the terms for women which initially were neutral (or at least not so negative) degenerated so that today they are quite negative in connotation:

spinster 'unmarried older woman' < 'one who spins'.

mistress < originally from a borrowing from Old French *maistresse* 'a woman who rules or has control'; earlier in English it meant 'a woman who employs others in her service, a woman who has the care of or authority over servants or attendants'.

madam 'the female head of a house of prostitution' < 'a polite form of address to women'.

Italian *putta* and Spanish *puta* 'whore' earlier meant just 'girl' (compare Old Italian *putta* 'girl', *putto* 'boy'; Latin *putus* 'boy', *puta* 'girl'). Spanish *ramera* 'prostitute' earlier meant 'innkeeper's wife, female innkeeper'.

Some other examples of degeneration are:

(1) English *silly* 'foolish, stupid' comes from Middle English *sely* 'happy, innocent, pitiable', from Old English *sælig* 'blessed, blissful' (compare the German cognate *selig* 'blissful, happy').

(2) English *churl* 'a rude, ill-bred person' is from Old English *ceorl* 'man, man without rank, lowest rank of freemen', which became 'serf, tenant farmer' in Middle English, later 'countryman, peasant, rustic', then debased to 'base fellow, villain', and finally it came to have the modern sense of 'rude, ill-bred fellow' (compare the German cognate *Kerl* 'guy, chap, fellow').

(3) English *villain* 'criminal, scoundrel' was borrowed from French *villein* 'person of the villa/farm/homestead, serf, farm worker', and in Middle English meant 'low-born, base-minded rustic, a man of ignoble ideas or instincts', but later came to mean 'unprincipled or depraved scoundrel' and 'a man naturally disposed to criminal activities'.

(4) Spanish *sinistro* 'sinister' < Old Spanish *siniestro* 'left' (from Latin *sinister* 'left', the source of the loanword *sinister* in English).

(5) English *dilettante* did not originally have a negative connotation, but meant 'devoted amateur, one with love of a subject'; it shifted its meaning to 'a dabbler, amateur who lacks the understanding of professionals', and then to 'one with superficial interest in an area of knowledge'. *Amateur* is similar, originally a lover of the topic (a French loan

into English, from Latin *ama-tor* 'lover, one who loves'), then it acquired the meaning of 'a non-professional who engages in an activity for pleasure', and eventually was extended also so that now it includes the meaning of 'an incompetent person'.

(6) English *disease* 'illness' formerly meant 'discomfort' (*dis-* + *ease*, like *un-easy* today).

10.2.7 Elevation (amelioration)

Semantic changes of elevation involve shifts in the sense of a word in the direction towards a more positive value in the minds of the users of the language – an increasingly positive value judgement.

(1) *pretty* < Old English *prættig* 'crafty, sly'.

(2) *fond* < past participle of Middle English *fonnen* 'to be foolish, silly'.

(3) English *knight* 'mounted warrior serving a king', 'lesser nobility (below baronet)' comes from Old English *cniht* 'boy, servant', which shifted to 'servant', then 'military servant', and finally to the modern senses of 'warrior in service of the king' and 'lesser nobility'. (Compare the German cognate *Knecht* 'servant, farm hand'.)

(4) Spanish *caballo* 'horse' < Latin *caballus* 'nag, workhorse'.

(5) Spanish *calle* 'street' < Latin *calle* '(cattle-)path'.

(6) Spanish *casa* 'house' < Latin *casa* 'hut, cottage'.

(7) Spanish *corte* 'court' < Latin *cohortem, cortem* 'farmyard, enclosure', which came to mean 'division of a Roman military camp', which was extended to include 'body of troops (belonging to that division)' to 'imperial guard' and then further to 'palace' (see English *court*, a loan from Old French *court*, Modern French *cour* 'court (legal, royal), courtship' with the same Latin origin as the Spanish forms).

(8) The *villa* of the Middle Ages meant 'farm, homestead', but was elevated in French *ville* to 'city, town', Spanish *villa* 'village, town, country house' (compare Italian *villa* 'country house').

(9) English *dude* 'guy, person' (slang in origin) was in 1883 a word of ridicule for 'a man who affects an exaggerated fastidiousness in dress, speech and deportment, concerned with what is aesthetically considered "good form", a dandy'.

10.2.8 Taboo replacement and avoidance of obscenity

Much is written about semantic changes and changes in vocabulary which involve responses to taboo and obscenity, and euphemism in general,

though many of these changes might better be treated merely as examples of degeneration and metaphor and so on. In the sorts of semantic changes considered so far, focus is on changes in the meaning of words whose phonetic form mostly remains unaltered. There are cases of lexical replacement where a meaning remains but the phonetic realisation of it is changed in some way, usually by substituting some other lexical item which had other denotations of its own before the change. Thus, lexical replacements involve more than meaning shifts, although change in the meaning may also be involved. Changes involving taboo and obscenity are prime examples of this sort. For instance, in English, *ass* 'long-eared animal related to a horse' has essentially been replaced in America by *donkey* (or *burro*) because it is considered too close for comfort to obscene *ass* 'derriere, arse'; *cock* 'adult male chicken' is replaced by *rooster* due to discomfort from the obscene associations of *cock* with 'penis'. In dialects of English where *bloody* is obscene, what is generally called a *bloody nose* in North America becomes *blood nose* or *bleeding nose* in order to avoid the taboo word. The following two examples were mentioned in Chapter 6.

(1) Spanish *huevo* 'egg' came to mean both 'egg' and 'testicle', but because of the obscene associations of 'testicle', in colloquial Mexican Spanish *huevo* as 'egg' was avoided and replaced by *blanquillo* 'egg', originally 'small white thing' (*blanco* 'white' + *-illo* 'diminutive').

(2) Latin American Spanish *pájaro* 'bird' came to be associated obscenely also with 'penis', and for this reason *pajarito* is usually substituted for 'bird', from *pájaro* 'bird' + *-ito* 'diminutive'. This taboo avoidance is carried even further in Kaqchikel and K'iche' (Mayan languages of Guatemala), where in many dialects the native term *ts'ikin* 'bird' has become taboo due to influence from Spanish *pájaro* 'penis, bird' (Spanish is the politically dominant language of the region), and therefore has been replaced by *čikop* '(small) animal'. Thus the meaning of *čikop* has been extended to include both '(small) animal' and 'bird', while that of *ts'ikin* has been restricted now to only or predominantly 'penis', with the meaning 'bird' either eliminated or now very recessive.

Changes involving *euphemism*, the replacement of words regarded as unpleasant, are part of this discussion. Favoured examples involve the many euphemistic replacements of words meaning 'toilet'. Terms for 'toilet' frequently come to be considered indelicate, and substitutions lacking the distressing sentiments are made. The room where indoor toilets were installed was called *water closet* (abbreviated *WC*) in Britain; this was soon replaced by *toilet*, originally a loan from French *toilette* 'small cloth' (diminutive of *toile* 'cloth, towel') which in English originally meant 'a wrapper for clothes, a night-dress bag', then 'a cloth

or towel thrown over the shoulders during hairdressing', then 'a cloth cover for a dressing table', then 'articles used in dressing', 'furniture of the toilet' 'toilet-table', 'toilet service', and then 'the table upon which these articles are placed', 'the action or process of dressing', 'a dressing room with bathing facilities', and finally 'toilet/WC/bathroom'. Other euphemistic replacements include *lavatory*, *bathroom*, *restroom*, *com-mode*, *loo*, *john* and many others.

Spanish *embarazada* 'pregnant' (originally meaning 'encumbered') has essentially replaced earlier *preñada* 'pregnant'. (English *embarrass* also earlier meant 'to encumber, impede, hamper [movements, actions]', a borrowing from French *embarrasser* 'to block, to obstruct'.)

Not only can words be replaced or lost due to avoidance of obscenities and taboo, but also they are often changed phonetically to give more euphemistic outcomes, one source of new vocabulary. English has many such 'deflected' forms, for example: *blasted*, *darn*, *dang*, *dadnabbit*, *fudge*, *gadzooks*, *gosh*, *jeez*, *shucks*, *zounds* and many others. Varieties of Spanish have *pucha*, *puchis*, *púchica*, *futa* and the like as euphemistic replacements for *puta* 'whore' (very obscene); *chin* in Mexican Spanish replaces the very obscene *chingar* 'to have sexual intercourse (crudely)'. Examples of this sort are found in many languages. (Other cases of avoidance of taboo and obscenity are also seen in the discussion of *avoidance of homophony*, Chapter 11.)

10.2.9 Hyperbole

Hyperbole (*exaggeration*, from Greek *hyperbolē* 'excess') involves shifts in meaning due to exaggeration by overstatement.

(1) English *terribly*, *horribly*, *awfully* and other similar words today mean little more than 'very' (a generic intensifier of the adjective which they modify); by overstatement they have come to have no real connection with their origins, *terror*, *horror*, *awe* and so on.

(2) German *sehr* 'very' < 'sorely'.

(3) German *quälen* 'to torment, torture' < Proto-Germanic **k^waljan* 'to kill' (compare the English cognate *quell*, from Old English *cwellan* 'to kill, slay').

(4) English slang *lame* 'stupid, awkward, socially inept', from the original meaning 'crippled, having an impaired limb'.

10.2.10 Litotes

Litotes (*understatement*, from Greek *litótiēs* 'smoothness, plainness') is exaggeration by understatement (such as 'of no small importance' when

'very important' is meant). In many languages, examples of litotes are found involving verbs meaning 'to kill'. For example, English *kill* originally meant 'to strike, beat, hit, knock'. If you were to say *hit* but intend it to mean 'kill', this would be an understatement.

(1) French *meurtre* 'murder, homicide' comes via litotes from 'bruise', still seen in the etymologically related verb *meurtrir* 'to bruise' (compare the Spanish cognate *moretón* 'bruise, black-and-blue spot').

(2) French *poison* 'poison' originally meant 'potion, draught' (English *poison* was borrowed from French after this semantic shift).

(3) English *bereaved*, *bereft* 'deprived by death' < 'robbed' (Old English *be-* + *rēafian* 'to rob, plunder, spoil').

(4) English slang *inhale* 'to eat something fast' < 'to breathe in, draw in by breathing'.

10.2.11 Semantic shift due to contact

Though it is not generally found in traditional classifications of semantic change, examples of semantic shift due to language contact are occasionally pointed out in work on the history of specific languages. The following are a few examples.

(1) In K'iche' (Mayan), *kje:x* originally meant 'deer'; however, with the introduction of horses with European contact, *kje:x* came to mean 'horse'. Eventually, to distinguish 'deer' from 'horse', the term for 'deer' became *k'iče' kje:x*, literally 'forest horse'.

(2) In Lake Miwok (in California, of the Miwok-Costanoan family), with the introduction of European guns, the word *kó:no*, which originally meant 'bow', shifted to include 'gun'; the 'gun' meaning then extended so fully that 'bow' is now *hintí:l kó:no*, literally 'old-time gun' (*hintí:l* is a borrowing from Spanish *gentil* 'pagan', originally used to refer to unchristianised Indians) (Callaghan and Gamble 1997: 112).

10.2.12 Summary of traditional classification

As is easy to see, the categories of semantic change in this classification are not necessarily distinct from one another; rather, some of them overlap and intersect. For this reason, some scholars consider 'narrowing' and 'widening' to be the principal kinds of semantic change, with others as mere subtypes of these two. Some emphasise the tendency for change to be in the direction from *concrete* to *abstract* (see below). Instances of overlapping and intersection are easily found in the examples listed here. For example, a semantic change could involve widening, degeneration

and metonymy all at once, as in instances where terms for male and female genitals have taken on negative meanings for a man or woman of negative character, though often obscene (as in the meanings of English *prick* as 'penis' and 'miscreant male'). Another case is Yiddish *schmuck* 'penis, fool, stupid person', which originally meant 'jewel' (compare German *Schmuck* 'jewel, ornament'), but shifted to mean 'penis' (roughly analogous to the English jocular expression *the family jewels* to refer to the same general thing), then, as in the previous example, was extended further to 'fool, stupid person' (and along the way lost the original meaning of 'jewel'). *Schmuck* has been borrowed into English, primarily with the meaning of 'miscreant male'.

10.3 Attempts to Explain Semantic Change

Such general classifications of semantic change seem to offer little in the way of explaining how and why these changes take place in the ways they do. Nevertheless, many scholars have called for a search for regularities and explanations in semantic change, and some general tendencies have been discussed and some generalisations proposed. It is important to see what general understanding they may offer. The more traditional classifications of kinds of semantic change are generally thought to be useful for showing what sorts of changes might occur, but some of the generalisations that have been based on them amount to little more than a repetition in different form of the classification on which they are based. Others point out that semantic change and lexical change will not be explained in a vacuum, but will require appeal to and coordination with analogy, syntax (especially in the form of grammaticalisation; see Chapter 9), discourse analysis, pragmatics and social history. Because sociocultural historical facts are often relevant, some insist that it is useless to seek generalisations to explain semantic change, although most would admit that some general statements about how and why meaning changes may be possible even if not all semantic changes are regular or predictable.

Earlier work on semantic change was not totally without attempts at generalisation. A general mechanism of semantic change was believed to be the associative patterns of human thought, and thus traditional approaches to meaning change typically had a psychological-cognitive orientation, though social context and pragmatic factors were emphasised by others. All of these factors play a role in more recent work on semantic change.

In the past, it was rarely asked how semantic change might come

about, what pathways it might follow, and how it was to be explained, but many now recognise that semantic change must go through a stage of *polysemy*, where a word has more than one meaning. Thus in a historical shift a word might expand its sphere of reference to take on additional readings, becoming polysemous. Alternatively in a semantic change, a polysemous form may lose one (or more) of its meanings. A view which some have of semantic change combines both these situations: the word starts out with an original meaning, then acquires additional, multiple meanings, and then the original sense is lost, leaving only the newer meaning. Schematically this can be represented in three stages, beginning with form *a* which has meaning 'A':

- Stage 1: *a* 'A'
 Stage 2: *a* 'A', 'B' ('A' > 'A', 'B')
 Stage 3: *a* 'B' ('A', 'B' > 'B')

Some examples will be helpful.

(1) English *timber*, German *Zimmer* 'room'. In Stage 1, form *a* = Germanic **tem-ram*, meaning *A* = 'building' (originally from Proto-Indo-European **dem-rom*; compare Latin *dom-us* 'house' and Old English *timrian* 'to build'). In Stage 2, English *a* = *timber*, *A* = 'building', *B* = 'material for building', 'wood which supplies building material'. Similarly in Stage 2, German *a* = *Zimmer*, *A* = 'building', *B* = 'room'. In Stage 3, English *a* = *timber*, *B* = 'material for building', 'wood which supplies building material' (meaning *A* 'building' was lost). In Stage 3, German *a* = *Zimmer*, *B* = 'room' (meaning *A* 'building' was lost).

(2) English *write*. In Stage 1, *write* meant 'to cut, score' (compare the German cognate *reissen* 'to tear, split'). In Stage 2, the meaning was extended to include both 'to cut, scratch' and 'to write'; the connection is through runic writing, which was carved or scratched on wood and stone (compare Old Icelandic *ríta* 'to scratch, to write'). This stage is attested in Old English *writan* 'to write', 'to cut'. Stage 3 is illustrated by modern English *write* meaning 'to write' only, where the sense of 'to cut' or 'to scratch' has been lost.

(3) Spanish *alcalde* 'mayor', when first borrowed from Arabic *qāḍī*, meant 'judge (in Islamic law)' (*A*), but was later broadened to mean 'an official who is magistrate and mayor' (*B*, added with *A*), and then eventually the term was restricted in meaning to only 'mayor' (only *B*, since *A* was lost).

This view recognises (at least implicitly, and often explicitly) an intervening stage of polysemy as necessary in semantic changes. Others do not emphasise this view so much; rather, they recognise that lexical

items typically have a core meaning (or group of related core concepts) but also various less central, more peripheral senses when used in a variety of discourse contexts, and they see semantic change as a less central sense becoming more central and the original core concept receding to be more peripheral, often being lost altogether. Still others see meaning as a network or semantic map where items within a semantic domain and from other domains are related by various overlappings in the polysemous choice which each lexical item has. Semantic change in this view follows paths of connections in the network, selecting and emphasising different senses which the items have in different contexts. These are not really different approaches, but rather just more realistic versions of the view that holds that polysemy is a necessary intermediate step in semantic change.

Most linguists, past and present, have looked to structural (linguistic) and psychological factors as a primary cause of semantic change; however, historical factors outside of language have also been considered important causes of semantic change. Changes in technology, society, politics, religion and in fact all spheres of human life can lead to semantic shifts. Thus, for example, *pen* originally meant 'feather, quill' (a loan from Old French *penne* 'feather, writing quill'; compare Latin *penna* 'feather'), but as times changed and other instruments for writing came into use, the thing referred to by the word *pen* today is not remotely connected with 'feathers'. As guns replaced older hunting implements and weapons, terms meaning 'bow' (or 'arrow') shifted to mean 'gun' in many languages. Thus in the Lake Miwok example mentioned above, *kó:no* 'gun' originally meant 'bow'. The word for 'blowgun' in K'iche', *u6*, shifted its meaning to include 'shotgun'. In the wake of automobiles and aeroplanes, *fly* and *drive* have taken on new meanings. There are countless such examples, of words whose meanings have changed due to sociocultural and technological change in the world around us, and several of the examples presented here in the classification of kinds of semantic changes are of this sort. For example, changes in religion and society are behind the shift from *blēdsian* 'to mark with blood in an act of consecration in pagan sacrifice' to modern *to bless*; and, as 'pelts' were replaced as a medium of exchange, Finnish *raha* shifted its meaning from 'pelt' to 'money'. In the historical events that brought English-speaking settlers to America, Australia, New Zealand, South Africa and so on, new plants and animals were encountered and sometimes native English words which originally referred to very different species were utilised for these new species, leading to semantic shifts in the meaning of these words. Thus, for example, *magpie* and *robin* refer to totally

different species of birds in the North America, the UK and New Zealand. *Magpie* in Europe is *Pica caudata* (of the family of *Corvidae*); the American magpie is *Pica pica hudsonia*; and the New Zealand and Australian magpie is *Gymnorhina tibicen* (of the *Cracticidae* family). *Robin* in England is of the genus *Erithacus*; in North America *robin* refers to *Turdus migratorius*; the New Zealand robin is *Petroica australis* (of the family *Muscicapidae*). The American *possum* (or *opossum*) (*Didelphis virginiana*) and Australian *possum* (*Trichosurus vulpecula*, and other species) are very different animals. Many Spanish words have undergone semantic changes as the result of similar historical events; for example, *gorrión* means a 'sparrow' in Spain, but shifted its meaning to 'hummingbird' in Central America; *tejón* means 'badger' in Spain, but 'coati-mundi' in Mexico; *león* refers to 'lion' in Spain, but has shifted to 'cougar, mountain lion' in many areas of Latin America; similarly, *tigre*, originally 'tiger', means 'jaguar' in much of Latin America. It is this sort of shift in meaning which makes it so difficult to generalise about semantic change. Since changes in society and technology are for the most part unpredictable, their affects on semantic change are also not predictable.

More recent work concentrates on the general directionality observed for some kinds of semantic changes, and attempts based on these are being made to elaborate a more explanatory approach, one which might predict possible and impossible changes or directions of change. Eve Sweetser's and Elizabeth Closs Traugott's work in this area has been the most influential (see Sweetser 1990, Traugott 1989, Traugott and Heine 1991, and Traugott and König 1991; see also Hopper and Traugott 1993: 68–93). Some general claims about semantic change which have been formulated are the following.

1. Semantically related words often undergo parallel semantic shifts. For example, various words which meant 'rapidly' in Old English and Middle English shifted their meaning to 'immediately'.
2. Phonetic similarity (especially cases of phonetic identity, homophony) can lead to shifts which leave the phonetically similar forms semantically more similar (sometimes identical). Note the confusion and lack of contrast in many English dialects for such sets of related words as *sit/set* and *lie/lay*.
3. Spatial/locative words may develop temporal senses: *before*, *after*, *behind*. Also, spatial terms often develop from body-part terms, as in *ahead of*, *in the back of*, *at the foot of*.
4. Some common semantic shifts typically (though not absolutely

always) go in one direction and not the other; cases which recur and are found in numerous languages include the following.

(1) Words having to do with the sense of touch may typically develop meanings involving the sense of taste: *sharp, crisp*.

(2) Words involving the sense of taste may develop extended senses involving emotions in general: *bitter, sour, sweet*.

(3) Obligation > possibility/probability – more precisely, *root* senses of modals, also called *deontic* senses, by which is meant real-world forces, such as obligation, permission and ability, typically develop *epistemic* meanings (where epistemic means ‘speaker’s assessment’ and denotes necessity, probability and possibility involving reasoning). For example, in the history of *may*, the meaning was first physical ability (*Jane may come* = ‘Jane is able to come’); then the sense of social permission developed (‘Jane is allowed to come’); finally the epistemic, logical possibility sense came about (‘it is perhaps the case that Jane will come’). The history of *must* is similar: first, *Bess must sing* had the root meaning ‘it is a requirement in her family that Bess sing’; second, an epistemic sense was added, ‘that Bess must sing is a reasoned conclusion based on the evidence that her father and mother and brothers and sisters all sing, so it is likely that she, too, sings’. In these examples, the root senses are original and the epistemic senses developed later.

(4) Propositional > textual – things with propositional meanings tend to develop textual and later expressive meanings. For example, *while* in modern English means (1) ‘a period of time’ (propositional, a specific temporal situation), (2) ‘during the time that’ and (3) ‘although’ (textual, connecting clauses); however, *while* comes from Old English *ƿa hwīle ƿe* [that.Accusative while/time.Accusative Subordinate.particle] ‘at the time that’, which had only the propositional sense, not the later textual one. This phrase was reduced by late Old English times to *wile*, a simple conjunction (Traugott and König 1991: 85).

(5) ‘see’ > ‘know, understand’.

(6) ‘hear’ > ‘understand’, ‘obey’.

(7) Physical-action verbs (especially with hands) > mental-state verbs, speech-act verbs. For example, verbs such as ‘grasp’, ‘capture’, ‘get a hold on’, ‘get’, ‘catch on to’ very commonly come to mean ‘understand’; thus, *feel* goes from ‘touch, feel with hands’ to ‘feel, think, have sympathy or pity for’; Spanish *captar*, originally ‘capture, seize’, added the sense ‘to understand’; Finnish *käsittää* ‘to comprehend’ is derived from *käsi* ‘hand’; Spanish *pensar* ‘to think’ comes from Latin *pēnsāre* ‘to weigh’. English *fret* ‘worry, be distressed’ formerly meant

'to eat, gnaw' (compare the German cognate *fressen* 'to eat, devour, consume (of animals, or rudely of people)').

(8) Mental-state verbs > speech-act verbs (*observe* 'to perceive, witness' > 'to state, remark').

(9) 'man' > 'husband' (German *Mann* 'man, husband' < 'man').

(10) 'woman' > 'wife'.

(11) 'body' > 'person' (compare *somebody*).

(12) 'finger' > 'hand'.

(13) 'left(-handed, left side)' > 'devious, evil, foreboding' (English *sinister*, ultimately from Latin *sinister* 'left').

(14) 'know' > 'find out', 'taste' (compare Spanish *saber* 'to know, to taste').

(15) animal names > inanimate objects. For example, Spanish *gato* 'jack (for raising cars)' < *gato* 'cat'; in Central American Spanish *mico* 'jack' < *mico* 'monkey'; Spanish *grúa* '(construction) crane' < Old Spanish *grúa* 'crane' (bird) (compare Modern Spanish *grulla*, *grúa* 'crane (bird)' (compare English *crane* '(bird) crane', 'building crane').

Traugott speaks of broad explanatory tendencies:

1. Meanings based on the external situation > meanings based on the internal situation (evaluative/perceptual/cognitive). This would cover, for example, the cases called degeneration and elevation, which involve value judgements on the part of the users of the language. It would also include many of the examples from (5–7) above.
2. Meanings based on external or internal situations > meanings based on textual or (meta)linguistic situations. This would include many instances from (4), (7) and (8) above.
3. Meanings tend to become increasingly based on speakers' subjective beliefs/states/attitudes towards the proposition. Instances of (1), (2) and especially (3) above illustrate the change of meaning involving increase in subjective reaction. Many metonymic semantic changes fall under this. (See Traugott 1989.)

It is frequently claimed that semantic shifts typically go from more *concrete* to more *abstract*. For example, there are many semantic changes which extend body-part notions to more abstract meanings, but not the other way around, as with German *Haupt* once meaning only 'head' (body part, concrete), but now limited mostly to the meaning 'main' or 'principal', as in *Hauptstadt* 'capital' (*Haupt* 'head' + *Stadt* 'town, city'), *Hauptbahnhof* 'central station' (*Haupt* 'head' + *Bahnhof* 'railway station'). While this is an interesting and important claim, a

number of the traditional classes of semantic change, for example narrowing in particular, often involve change towards more concreteness, and therefore the claim needs to be understood as only a broad general tendency which can easily have exceptions.

10.4 Other Kinds of Lexical Change – New Words

There are many kinds of lexical change that are not limited to semantic change. Several sources of new vocabulary have already come up in the treatment of various kinds of analogy, borrowing and the semantic changes. We will not bring these up again here, but will concentrate on other sources of *neologisms* (new words in a language), presenting a more or less traditional classification of kinds of lexical change together with examples. Abundant examples involving the more productive sources of neologisms are found especially in slang, advertising and political discourse.

10.4.1 Creations from nothing (*root creations*)

Creations of new words from nothing, out of thin air, are rare, but putative examples exist. Examples that are often cited of this include:

1. *blurb* coined by Gelett Burgess (American humorist) in 1907.
2. *gas* coined by Dutch chemist J. B. van Helmont in 1632, inspired by Greek *khāos* 'chaos', where the letter g of Dutch is pronounced [x], corresponding to the pronunciation of the Greek letter χ, the first of the word for 'chaos'.
3. *paraffin* invented by Reichenbach in 1830, based on Latin *parum* 'too little, barely' + *affinis* 'having affinity'.

It might be objected that in most cases of this sort, the creation isn't really fully out of 'nothing'; for example, *gas* has Greek 'chaos' lying in some way behind it; the creation of *paraffin* utilised pieces from Latin. Probably better examples of creations from nothing could be found in certain slang terms (*zilch*, *bonking*) and product names (see below).

A related source of new words is *literary coinage*, new words created by (or at least attributed to) authors and famous people.

1. *blatant* < Edmund Spenser (between 1590 and 1596).
2. *boojum* < Lewis Carroll.
3. *chortle* < Lewis Carroll (a blend of *chuckle* + *snort*).

4. *pandemonium* 'the abode of all the demons, the capital of Hell', from John Milton's *Paradise Lost*, 1667 (the pieces from which this was created are Greek).
5. *yahoo* < Jonathan Swift's *Gulliver's Travels*, the name created for an imaginary race of brutes with human form.

10.4.2 From personal names

From names of individuals we have examples such as:

1. *guillotine* borrowed from French *guillotin*, named after the French physician Joseph-Ignace Guillotin, who suggested that the instrument be used in executions in 1789.
2. *macadam* (*road*) named after John Loudon McAdam (1756–1836) for the kind of road he invented and the kind of material used in it.
3. *sandwich* said to be named after John Montagu, the 4th Earl of Sandwich (1718–92), who spent twenty-four hours gambling with no other food than slices of cold meat between slices of toast.
4. *volt* named after Alessandro Volta, Italian scientist and physician (1745–1827).

There are also words which originate from names of groups of people:

gothic from the Goths (Germanic tribes);
to gyp 'to cheat, swindle' from 'Gypsy' (today considered improper, racist);
to jew (a price down) from 'Jew' (now avoided because of its negative stereotype of an ethnic group);
vandal, *vandalise* from the Vandals (another Germanic tribe);
welch, *welsh* 'to cheat by avoiding payment of bets' said to be from 'Welsh'.

10.4.3 From place names

1. *canary* < Canary Islands.
2. *currant* ultimately from *Corinth*, a loan from Old French *raisins de Corauntz* (Modern French *raisins de Corinthe*) 'raisins of Corinth'.
3. *denim* ultimately from French *serge de Nîmes* 'serge (a woollen fabric) of Nîmes' (a manufacturing town in southern France).
4. *jeans* < Genoa (for a twilled cotton cloth associated with Genoa).
5. *peach* < Persia. English *peach* is a loan from French *pêche* which derives from Latin *malum persicum* 'Persian apple'; 'Persia' as the

Semantic Change and Lexical Change

source of words for 'peach' is more visible in German *Pfirsich* and Finnish *persikka*.

6. *sherry* < Jerez (a place in Spain associated with this fortified Spanish wine).
7. *spa* < Spa (place in Belgium celebrated for the curative properties of its mineral water).
8. *tangerine* < Tangier, Morocco.

10.4.4 From brand (trade) names

1. *coke, cola* (drink), *coca-cola* < Coca-Cola.
2. *frig, frigidaire* < Frigidaire (in the USA).
3. *jello* (jelly crystals, a gelatin dessert in North America) < Jell-O.
4. *kleenex* (tissue) < Kleenex.
5. *levis, levi jeans* < Levi Strauss.
6. *xerox* < Xerox.

10.4.5 Acronyms

Acronyms are words derived from the initial letters or syllables of each of the successive parts of a compound term or word: *ASAP* < 'as soon as possible'; *beemer* < 'BMW automobile'; *Benelux* < Belgium–Netherlands–Luxembourg; *BS* < 'bullshit'; *CD* < 'compact disc'; *CIA* < 'Central Intelligence Agency'; *DJ* < 'disc jockey'; *emcee* < 'master of ceremonies'; *Gestapo* < from German *Geheime Staatspolizei* 'secret state's police', borrowed into English; *MD* < 'medical doctor'; *MP* < 'military police', *MP* < 'member of parliament'; *OJ* < slang for 'orange juice'; *PDQ* 'fast' < 'pretty damned quick'; *radar* 'radio direction and ranging'; *RAM* < 'random access memory'; *ROM* < 'read-only memory'; *scuba* (diving) < 'self-contained underwater breathing apparatus'; *SNAG* < 'sensitive new-age guy'; *TMJ* 'temporomandibular-joint disorder'; *UK*; *USA*; *VCR* < 'video cassette recorder'; *yuppie* < 'young urban professional'; and many more.

Some forms are turned into acronym-like words even though they do not originate as such; these usually involve sequences of letters from principal syllables in the word, for example: *TV* < television; *PJs* < pyjamas.

10.4.6 Compounding

all-nighter (to pull an *all-nighter* 'to stay up all night long, usually to study for exams'); *bad(-)ass*; *bag lady*; *boombox*; *brain-dead* 'stupid,

unable to think'; *cashflow*; *couch potato* 'lazy person, someone who just lies around'; *downmarket* 'less expensive, less sophisticated'; *downside*; *glass ceiling* 'hypothetical barrier which allows a goal to be viewed but denies access to it'; *-head* (as in *airhead*, *butthead*, *deadhead*, *dickhead*, *doughhead*); *knee-jerk* (adjective); *mad cow disease*; *melt-down*; *motormouth*; *-person* (as in *busperson*, *chairperson*, *clergyperson*, *minutepersons*); *red-eye* 'cheap whisky', *red-eye* 'early-morning or late-night flight'; *scumbucket* 'despicable person'; *shareware*; *slamdunk*; *stargaze*; *studmuffin* 'a muscular or attractive male'; *tummytuck*; *underhanded*; and so on.

In the case of older compounds, later changes often make the original components of the compound no longer recognisable, for example:

1. *elbow* < Proto-Germanic **alinō* 'forearm' + **bugōn* 'bend, bow' (compare Old English *eln* 'forearm, cubit').
2. *gamut* < *gamma*, the name of the Greek letter *G*, introduced in the Middle Ages to represent a note on the musical scale one note lower than *A*, which began the scale, + *ut*, the first of a series of six syllables used to name the six notes of a hexachord.
3. *gossip* < Old English *godsibb* (*God* + *sib* 'related') 'one who has contracted spiritual affinity with another by agreeing to act as sponsor at a baptism', which came to mean 'family acquaintance, friend' and 'a woman's female friends invited to be present at a birth', and to 'someone, usually a woman, of light and trifling character' to 'the conversation of such a person', 'idle talk'.
4. German *Elend* 'misery, miserable' < Old High German *elilenti* 'sojourn in a foreign land, exile' (compare Gothic *alja-* 'other' + *land* 'land').

In others, the source of the compounding is only partially perceived today: *cobweb* < Middle English *coppe* 'spider' + *web*; *nickname* < *an* + *eke* 'additional' + *name*; *werewolf* < Old English *wer* 'man' (cognate with Latin *vir* 'man') + *wolf*.

10.4.7 Other productive word-formation and derivation devices

In addition to compounding, new words are derived more or less productively through the employment of various derivational affixes in word-formation processes. Others involve what have been called 'neo-classical' compounds (involving elements from Greek or Latin (such as *auto-*, *trans-*, *bio-* and so on). A few examples illustrating these processes

Semantic Change and Lexical Change

are: *auto-* (*autopilot*, *auto-suggestion*); *-belt* (*banana belt*, *bible belt*, *cow belt*); *mega-* (*mega-sound*, *mega-show*, *mega-event*); *micro-* (*microenvironment*, *micromini* 'very short skirt', *microcapsule*, *microprocessor*, *microsurgery*); *mini-* (*minibike*, *minicomputer*, *minimart*, *miniskirt*, *mini-series*); *pan-* (*pandemic*, *pan-galactic*, *pan-national*); *pre-* and *post-* (*pre-packaged*, *pre-washed*, *post-colonialist*, *post-structuralism*); *pseudo-* (*pseudo-friend*, *pseudo-psychological*, *pseudo-scholar*, *pseudo-Western*); *trans-* (*transmigration*, *transnationals*, *transpacific*); *ultra-* (*ultraliberal*, *ultramodern*, *ultraradical*, *ultrashort*); *-ism/-ist* (*racist*, *sexism*, *fattist*, *neologism*) among many others. Some of these overlap with blends, such as *bio-*: *biodiversity*, *biosphere*; and *eco-* (< *ecology*, *ecological*): *ecotourism*, *eco-friendly*, *ecofreak*.

10.4.8 Amalgamation

Amalgamations are forms which formerly were composed of more than one free-standing word (which occurred together in some phrase), which as a result of the change get bound together in a single word. For example, English *nevertheless* and *already* are now single words, but come from the amalgamation of separate words, of *never* + *the* + *less* and *all* + *ready*. English has many words of this sort in whose background lies the amalgamation of earlier separate words into a single lexical item. Amalgamation is often considered a kind of analogy. (Similarly, cases of blending and contamination are sometimes treated as kinds of lexical change, as discussed in Chapter 4 on analogy.) We can see amalgamation under way in the frequent (mis)spellings of *alright* for *all right* (probably influenced by analogy with *already*) and *alot* for *a lot* meaning 'many, much'.

(1) Some examples of amalgamations in English are: *almost* < *all most*, *alone* < *all one*, *altogether* < *all together*, *always* < *all ways*, *however* < *how ever*, *without* < *with out*.

(2) Spanish *usted* 'you (formal, polite)' < *vuestra merced* 'your grace'.

(3) Spanish *también* 'also' < *tan bene* 'as well', *todavía* 'still, yet' < *tota via* 'all way(s)'.

(4) Latin *dē mănē* (*dē* 'of' + *manus* 'good (ablative)'), meaning 'in good time', is behind amalgamated forms meaning 'morning, tomorrow' in some of the Romance languages, for example French *demain* 'tomorrow' and Italian *domani* 'morning, tomorrow'. Later, French underwent further amalgamations: *en demain* ('in' + 'tomorrow') > *l'endemain* (*l(e)* 'the' + *endemain*) > *le lendemain* 'tomorrow, the next day'.

(5) Latin *hodie* 'today' should have ended up in French as *hui*, but this was further amalgamated, first to *jour d'hui* (from *jour* 'day' + *d(e)* 'of' + *hui* 'today') and then on to *aujourd'hui* 'today, nowadays' (from *au* 'to the' + *jour d'hui* – even *au* is an amalgam of *a* 'to' + *le* 'the').

(6) Spanish *hidalgo* 'noble', Old Spanish *fijodalgo*, come from *fijo* 'son' (Latin *filiu-*, compare Modern Spanish *hijo* 'son') + *d(e)* 'of' + *algo* 'something/wealth'.

(7) French *avec* 'with' comes from Latin *apud* 'with, by, beside' + *hoc* 'this, it', literally 'with/by this'.

(8) Spanish *nosotros* 'we' comes from *nos otros* 'we others', *vosotros* 'you (familiar plural)' from *vos otros* 'you others'.

(9) English *wannabe(e)* of slang origin ('someone who tries to be accepted by a group, adopting its appearance and manners') < *want to be*.

Note that many of the cases today called *grammaticalisation* (see Chapter 9) are instances of amalgamation, where formerly independent words are amalgamated with the result that one becomes a grammatical affix.

(10) For example, in Spanish and other Romance languages, forms of the verb *haber* 'have' (from Latin *habēre*) were amalgamated with infinitives to give the 'future' and 'conditional' morphological constructions of today, for example *cantar he* > *cantar-hé* > *cantaré* 'I will sing' (*he* 'first person singular' of *haber*), *cantar has* > *cantar-has* > *cantarás* 'you will sing' (*has* 'second person singular' of *haber*); *cantar habías* > *cantarías* 'you would sing' (*habías* 'you had').

(11) In another example, *mente* 'in mind' (from the ablative of Latin *mens* 'mind') was grammaticalised in Romance languages as an adverbial clitic (in Spanish) or suffix (in French). From *absoluta mente* 'in absolute mind' we get Spanish *absolutamente* and French *absolument* 'absolutely'. (For discussion and other examples, see Chapter 9.)

10.4.9 Clipping (compression, shortening, ellipsis)

Often, new words or new forms of old words come from 'clipping', that is, from shortening longer words. The several examples from English which follow show this process: *ad* < advertisement, *bike* < bicycle, *bus* < Latin *omnibus* 'for everyone' (*-bus* dative plural case ending – this is a much-cited example), *condo* < condominium, *decaf* < decaffeinated coffee, *dis(s)* (*dissing*) < 'to be disrespectful towards someone', *fan* < fanatic, *gym* < gymnasium, *jock* ('athlete') < jockstrap, *limo* < limousine, *math/maths* < mathematics, *mod* < modern, *nuke* (*nukes*, *to nuke*) < nuclear weapons, *a perm*, *to perm* < permanent wave, *perp* < perpetrator,

Semantic Change and Lexical Change

phone < telephone, *pro* < professional, *psycho* < psychotic, *pub* < public house, *rad* < radical, *schizo* [skitso] < schizophrenic, *stats* < statistics, *sub* < substitute ('a substitute, to substitute'), *telly* < television, *veg*, *to veg out* < vegetate. Popular on restaurant menus (in North America) is *shrooms*, a clipped form of *mushrooms*; it remains to be seen whether it will survive.

10.4.10 Expressive creations

Onomatopoeia is another source of new words, creations with only nature as a model, thought to be the source of words such as *buzz*, *gag* and so on. Interjections (ejaculations) are another source, exemplified by *ah*, *oh*, *wow*, *pow*, *whew*, *shush* and many others. Some expressive words seem to develop out of nothing, as for example *bodacious* 'remarkable, fabulous' and *humongous* (also spelled *humungous*) 'very large'. In most cases such as these, blending is involved, and while the origin of these two words is uncertain, it is possible that *bodacious* is connected in some way to *bold* and *audacious*, and that *humongous* perhaps involves *huge* in some way.

10.4.11 Obsolescence and loss of vocabulary

Those who work on lexical change are interested not only in the adoption of new vocabulary, but also in the question of why vocabulary items become archaic and sometimes disappear altogether from a language. While the use of particular words can fade for a number of social and stylistic reasons, the primary cause is the disappearance in common talk of a word because of the disappearance in society of the thing it refers to – that is, historical changes in society can lead to vocabulary loss as well as to semantic shifts (mentioned above). For example, there was a large range of vocabulary involving falconry, armour, feudal society and other institutions and technologies of the Middle Ages which in effect has become totally forgotten, as these things faded from modern life. Replacement of one word by another for the same meaning is another frequent means by which vocabulary is lost.

10.5 Exercises

Exercise 10.1

Attempt to find examples of your own of new vocabulary items which represent some of the categories of lexical and semantic change discussed in this chapter. You can do this by listening for words that you think are

new in the speech of your friends and family or by asking others if they can think of any examples. Slang is a fertile area for new vocabulary and semantic shifts.

Exercise 10.2 Lexical change

The *Longman Register of New Words* for 1990 (see Ayto 1990) lists, among hundreds of others, the following new English words which were first recorded after 1988. Can you determine where these come from, that is, how they came about? What processes of vocabulary creation, semantic change or other kinds of linguistic changes do you think lie behind these new words? (You may have to look some of these up, or ask your friends who might know what they mean.)

barbify; bimboy; birth-mother; bonk-happy; dweeb; geeky; karaoke; motormouth; sicko; soundbite

Exercise 10.3 Semantic change

Look up the following words in a dictionary which provides basic etymologies for words. (*The Oxford English Dictionary* is generally recognised as the primary authority in this area and is recommended here, although a number of other dictionaries also provide useful etymological information.) Determine what change in meaning has taken place in each word. State which type of semantic change is involved (from among the types defined in this chapter). What do you think caused the semantic change to come about in these words?

For example, if you were to see *villain* in the list, you would look it up and find out that it originally meant 'person of the villa/farm' but has changed its meaning to 'criminal, scoundrel', and you would state that this is an example of *degeneration* (or *pejoration*).

corpse; crafty; disease; fame; journey; officious; science; starve; thing; vulgar

Exercise 10.4

In the following examples of semantic change, identify the kind of semantic change involved (widening, narrowing, metonymy and so on).

1. Spanish *cosa* 'thing' < Latin *causa* 'matter, cause, question'.
2. Spanish *dinero* 'money' < Latin *dēnāriū* 'coin (of a particular denomination)'.
3. Spanish *pariente* 'relative' < Old Spanish *pariente* 'parent'.
4. Spanish *segar* 'to reap (to cut grain, grass with a scythe)' < Latin *secāre* 'to cut'.

Semantic Change and Lexical Change

5. Old Spanish *cuñado* 'relation by marriage' shifted to 'brother-in-law' in Modern Spanish. (This Spanish word comes ultimately from Latin *cognātu* 'blood-relation'.)
6. Mexican Spanish *muchacha*, formerly only 'girl', now has a primary meaning 'maid, servant woman' in some contexts.
7. Modern Spanish *siesta* 'afternoon nap (rest period during the heat of the day)' < Old Spanish *siesta* 'midday heat' (ultimately from Latin *sexta* (*hōra*) 'sixth (hour)').
8. English *gay* 'homosexual' is the result of a recent semantic shift, where the original sense, 'cheerful, lively', has become secondary; the shift to the 'homosexual' sense perhaps came through other senses, 'given to social pleasures, licentious', which the word had.
9. English *to spill* formerly meant (from c. 1300 to 1600) 'to destroy by depriving of life, to put to death, to slay, to kill'.
10. French *cuisse* 'thigh' < Latin *coxa* 'hip' (Spanish *cojo* 'lame, crippled' is thought also to be from Latin *coxa* 'hip').
11. Spanish *cadere* 'hip' < Latin *cathedra* (from Greek) 'seat'.
12. Spanish *ciruela* 'plum' < Latin *prūna cēreola* 'waxy plum' (*prūna* 'plum' + *cēreola* 'of wax').
13. French *viande* 'meat' formerly meant 'food' in general. (This change parallels English *meat* which originally meant 'food'.)
14. Spanish *depende* 'to depend, to hang' < Latin *dēpendere* 'to hang'.
15. English *lousy* 'worthless, bad' < 'infested with lice'.

Explaining Linguistic Change

These phonetic changes [in Grimm's Law] have, it is true, been brought about by the influence of climate, food, laziness or the reverse, analogy, and fashion; but we are still ignorant of the relative power of these causes, and the precise manner in which they affect the phonology of a language.

(Sayce 1874: 16)

11.1 Introduction

This chapter is concerned with the explanation of linguistic change or, perhaps better said, with attempts that linguists have made towards explaining why languages change as they do. The explanation of linguistic change is a topic of much debate and considerable disagreement. In this chapter, we try to cut through the disagreements to see how linguists have attempted to explain linguistic change and to see whether the different kinds of explanations that are proposed provide a foundation for understanding why languages change. Until the early 1970s, it was common to find statements in historical linguistic works to the effect that we should be concerned with 'how' languages change, but that the question of 'why' languages change could not be answered and therefore should be avoided. For example, from Joos (1958: v) we read: 'If the facts have been fully stated, it is perverse or childish to demand an explanation into the bargain' (intended perhaps more of descriptive linguistics); in Lehmann's introduction to historical linguistics, we are told: 'A linguist establishes the facts of change, leaving its explanation to the anthropologist' (1962: 200, in a discussion of semantic change). What is behind the comment about leaving explanation to the anthropologist is the once widely shared notion that the reasons for linguistic

change were like those for change in fashion – in one year new cars might have fins and in another not, or the hemlines of women's dresses might be higher one year and lower in another. So, the driving force behind language change was held to be cultural, to do with social choices and thus outside of the structure of language itself and hence not primarily even a linguist's concern. However, not everyone had such a pessimistic view, and many causal factors in linguistic change had been identified and discussed earlier, and in the last few decades much has been done to consolidate what we know about the causes of linguistic change. In this chapter, the term *causal factors* is used to designate both factors which always bring about change and those which create circumstances which are known to facilitate change but the change is not always obligatory when the factors are present. Much current research is directed at revealing the factors which help to explain language change.

In this chapter, we examine some of the better-known efforts in the direction of explaining linguistic change. We begin with a brief look at some of the earlier and less successful claims about why languages change, the ones we can safely eliminate from any theory of linguistic change.

11.2 Early Theories

Almost anything affecting humans and their language has at one time or another been assumed to be behind some change in language. Some of these today seem hilarious, some socially or morally disturbing, but fortunately some seem pointed, if only vaguely, in the right direction.

Climatic or geographical determinism was thought by some to lie behind some linguistic changes. A revealing example is the claim that the consonantal changes of Grimm's Law were due to life in the Alps, where all that running up and down mountains caused huffing and puffing which led to the voiceless stops becoming fricatives (the changes $*p > f$, $*t > \theta$, $*k > h$). Since examples of the same change are known in languages not found in mountainous regions and many other languages found in mountains are known where changes of this sort have not taken place, the suggested cause is neither necessary (given the existence of such changes in non-mountain languages) nor sufficient (given the lack of change in other mountain languages). In another case, even from as distinguished a linguist as Henry Sweet (1900: 32) we read:

The influence of climate may be seen in the frequency with which (a) is rounded in the direction of (o) in the northern languages of

Europe – as in English *stone* from Old English *stān* – as compared with the southern languages, in which it is generally preserved; this rounding of (a) is doubtless the result of unwillingness to open the mouth widely in the chilly and foggy air of the North.

Some spoke of *racial* and *anatomical determination*. One example of this is the notion that Germanic tribes had a greater build-up of earwax (for reasons left unaddressed) which somehow impeded their hearing, resulting in the series of consonantal changes in Grimm's Law. Whatever else we might say of this theory, it at least has the advantage of being specific enough that it could perhaps be tested – we assume that the results of any such test would be a negative correlation, that earwax in those with Germanic genes is not a significant factor for bringing about change in the languages which they speak. More insidious are claims of language change due to physical attributes assumed to be associated with different races. A most obvious example attributes phonetic traits encountered in some African languages – such as implosives, clicks or labiovelar sounds – to changes that must have taken place to produce such sounds in the first place, according to those making these claims, due to the anatomical structure of the lips of black Africans. Needless to say, this assumed correlation has proven totally devoid of foundation – change in African languages is in character just like that in languages elsewhere, and race plays no role.

Etiquette, social conventions and *cultural traits*. Many have speculated concerning cultural motivations for certain linguistic changes. For example, Wilhelm Wundt (a famous psychologist and linguist, writing in 1900) believed that the reason why Iroquoian languages have no labial consonants is because according to Iroquoian etiquette, so he reported, it is improper to close the mouth while speaking. Apparently the only evidence for this principle of Iroquoian etiquette was the fact that the Iroquoian languages lack labials. The same absence of labial consonants from Aleut, Tlingit and some African languages has at times been attributed to labrets (plugs, discs inserted in holes cut into the lips, an important part of personal adornment and ornamentation in some societies). However plausible this idea might seem to some, it has the disadvantage of not being testable. If a group lacking labials who also do not use labrets is found, it could be claimed that at some former time they did use the lip devices and this led to the loss of labial consonants and then sometime subsequently they just stopped utilising labrets. Or, if a language possessing labial consonants were found among a group which did wear labrets, it might be claimed that the lip-ornament fashion must not yet have been in vogue long enough to lead to the loss of

Explaining Linguistic Change

labials. That is, again, the proposed account of loss of labials due to the wearing of labrets is neither a sufficient nor a necessary explanation.

Indolence. A particularly common assumption, especially among lay people, is that language change is the result of laziness – young people or particular social groups who are seen to be changing their speech in ways disapproved of are assumed to be just too slovenly to pronounce correctly, or to produce the full or distinct grammatical forms, and so on.

Ease and simplification. A common assumption has been that language speakers tend towards ‘ease of articulation’, which leads to language change. ‘Simplification’ became an important part of the generative linguists’ approach to linguistic theory and consequently also to their views of linguistic change. We will need to look at this in more detail as we explore plausible explanations for why languages change.

Foreign influence (substratum) – borrowing. Languages do change through borrowing, indisputably, though often language contact has been exaggerated and abused in attempts to explain particular changes. Any change whose cause is otherwise not understood, or any exception to otherwise general accounts, was often attributed to influence from other languages, often in spite of no evidence in the neighbouring languages that might support such a view. For more practical views of the role of borrowing in linguistic change, see Chapters 3 and 12.

Desire to be distinct and social climbing. It was sometimes proposed that groups of people changed their language on purpose to distinguish themselves from other groups. Sociolinguistic study shows that group identity is a very important factor in many changes, but it is not achieved in quite such a simple-minded way as formerly conceived of. A more pervasive notion was that members of lower classes purposefully changed their speech by imitating the elite of society in order to improve their own social standing, and that as a consequence the upper class changed its language in order to maintain its distance from the masses. Sociolinguistic study of change, however, reveals that the more typical pattern is for the middle classes to initiate linguistic change and for the highest and lowest classes of society to change only later, if at all (see Labov 1994).

External historical events. It is sometimes asserted that particular historical events are the cause of certain linguistic changes. A typical example is the proposed correlation between certain linguistic changes and the expansion of the Roman Empire. Jespersen correlates the Black Death and the wars and social disruption of the later Middle Ages (which coincided in England and France) with the most rapid linguistic change.

Romance linguistics has had a tradition of more tolerance for explanations of linguistic changes involving external history; however, external history has not been accorded much attention in the Germanic historical linguistics tradition, which has had the strongest influence on general historical linguistics of today. Perhaps there should be more tolerance for it, but also appeal to external historical factors should not be abused – there are many examples in past scholarship of assumed external causes presented without evidence of causal connections between the linguistic change and the external history asserted to be involved.

11.3 Internal and External Causes

Recent literature on linguistic change often distinguishes *internal* and *external* causes of change. The internal causes are based on what human speech production and perception is and is not capable of – that is, the internal causes are determined for the most part by the physical realities of human biology, by limitations on control of the speech organs and on what humans are able to distinguish with their hearing or are able to process with their cognitive make-up. Thus, *internal* causes include physical and psychological factors. An example of a *physical* factor, involving the physiology of human speech organs, is seen in the typical sound change which voices stops between vowels (let us symbolise this as VpV > VbV). This change is in some sense explained by the limitations of human muscle control, which tends to maintain the vibration of the vocal cords (the voicing, which is inherent in vowels) across the intervening consonant. That is, it is much easier to allow the vocal cords to continue to vibrate right through the V-stop-V sequence (resulting in VbV) than it is to have the vocal cords vibrating for the first vowel, then to break off the voicing for the stop, and then to start up the vibration of the vocal cords once again for the second vowel (to produce VpV). *Psychological* or *cognitive* explanations involve the perception, processing and learning of language. For example, the change in which nasalised vowels are lowered (let us symbolise this as $\tilde{i} > \tilde{e}$), found so frequently in languages with contrastive nasalised vowels, is explained by the fact that, with nasalisation, vowel height tends to be perceived as lower. Thus $[\tilde{e}]$ tends to be perceived as $[\tilde{a}]$, for example, and this perception leads to changes in what speakers think the basic vowel is. This is illustrated, for example, by changes in French nasalised vowels:

$\tilde{e} > \tilde{a}$ (in the eleventh century), as in *pendre* > $[\text{p}\tilde{\text{a}}\text{dr}(\text{e})]$ ‘to hang’
 $\tilde{i} > \tilde{e}$ (in the thirteenth century), as in *voisin* > $[\text{vwa}'\text{z}\tilde{e}]$ ‘neighbour’
 $\tilde{y} > \tilde{a}$ (thirteenth century), as in $[\text{br}\tilde{y}]$ (spelled *brun*) > $[\text{br}\tilde{a}]$ ‘brown’.

Explaining Linguistic Change

External causes of change involve factors that are largely outside the structure of language itself and outside the human organism. They include such things as expressive uses of language, positive and negative social evaluations (prestige, stigma), the effects of literacy, prescriptive grammar, educational policies, political decree, language planning, language contact and so on. The following are a few examples of changes which illustrate external motivation.

(1) Finnish changed *ö* to *d* (for example, *veden* > *veden* 'water (genitive singular)') due to spelling pronunciation based on the Swedish reading model which dominated in Finland and was imposed in Finnish schools.

(2) Teotepeque Pipil (of El Salvador) changed *ʃ* to *r* (voiceless retroflex fricative became a trilled 'r') because local Spanish has *ʃ* as a highly stigmatised variant of its *r*. In this case, Spanish is the dominant national language and sociolinguistic attitudes about variant pronunciations of its /r/ have been transferred to this variant of Pipil, the minority language, leading to a change in its native phoneme which originally in Pipil had nothing to do with different pronunciations of /r/ – native Pipil has no 'r' sound of any sort.

(3) 'Flapping' of *t* and *d* between vowels (if the first is stressed, *t*, *d* > *r* / *ʒ*__V) is automatic in most varieties of American English, but for apparent reasons of prestige some speakers suspend flapping in such 'learned' forms as *Plato* [*ˈpʰleɪtʰəʊ*] and *Latin* [*ˈlætʰɪn*].

11.4 Interaction of Causal Factors

Change in one part of a language may have consequences for other parts. There is a trade-off between the phonological needs and the semantic needs of a language. A change in sound may have deleterious effects on aspects of the meaning side of language, and a change in meaning/function can have consequences for the sound system. At the crux of much debate concerning the explanation of linguistic change is thinking about the outcome of cases where a change in one side of a language has consequences for another side of the language. To understand the sort of causal factors that have been proposed and the debate over explanation of linguistic change, it will be helpful to begin with some examples which illustrate what is debated, and then to return to the debated explanations themselves afterwards with the examples as a basis for understanding the claims. Let us begin with well-known (putative) examples of morphological conditioning of sound change.

11.4.1 Classical Greek loss of intervocalic *s*

In a well-known change in Classical Greek, *s* was lost between vowels (*s* > Ø / V__V) except in certain 'future' and 'aorist' forms. In this case, loss of *s* by regular sound change would have destroyed the phonological form of the 'future' morpheme. One view of this set of circumstances is that the sound change was blocked, prevented from happening in just those cases where the meaning distinction between 'future' and 'present' would have been lost, and that is why intervocalic *s* was not lost in those 'future' forms. Changes such as this are called *morphologically conditioned* sound changes. Note, however, that the *s* of the 'future' was freely lost in verbs ending in a nasal or a liquid, where the future/present distinction could be signalled formally by the *e* which these future stems take. Compare the following two sets of verbs, where Set I retains *s* in the 'future' and Set II – *l*-stem or *n*-stem verbs with *e* in the future stem – loses the *s*:

Set I:

lúō	'I loosen'	lúsō	'I will loosen'
poié-ō	'I do'	poié-s-ō	'I will do'

Set II:

stéllō	'I send'	steléo [< *stele-s-ō]	'I will send'
mén-ō	'I remain'	mené-ō [< *mene-s-ō]	'I will remain'

It is said in this case that the need of the meaning side of language to be able to distinguish 'future' from 'present' prevented the sound change from occurring in Set I verbs where the 'future' would have been lost, but the sound change was allowed freely to delete intervocalic *s* even of the 'future' in Set II verbs where the contrast could be signalled by other means. With the verb stems ending in a nasal or a liquid, in Set II, where the distinction between 'present' and 'future' could still be signalled by the presence of the *e* of 'future' stems, the *s* of 'future' was freely lost (compare Anttila 1989: 99).

Another view of this example relies on analogy. Its supporters point to Greek verb roots which end in consonants (other than liquids and nasals) where the *s* of 'future' was not threatened, since it came after a consonant and was thus not between vowels, as for example *trép-s-ō* 'I will turn' (compare *trép-ō* 'I turn'). They argue that forms such as *lúsō* actually did at one time lose the intervocalic *s* which marked the 'future', but that later in time, the *s* of 'future' was restored to them under analogy with the *s* 'future' found with verbs such as *trép-s-ō*

whose roots ended in a consonant: (*lũso* > *lũo* (by sound change), then > *lũso* (by analogy)).

The first view, favouring morphological conditioning (the blocking of the sound change in just those cases where it would have negative effects on important meaning distinctions), sees *prevention* for functional reasons (to maintain important meaning distinctions) as the explanation behind this example. Supporters of the second view, which favours analogical restoration after the initial loss by regular sound change, see post-operative *therapy* as the explanation, the fixing-up after the fact of the negative consequences of sound change for meaning distinctions by other means. We will soon turn to a more direct consideration of the notions of prevention, therapy, compensation and multiple causation; however, for now let us look further at some additional examples first.

11.4.2 Estonian loss of final *-n*

A change in Estonian, similar to that in Classical Greek, is also well known in the linguistic literature (Anttila 1989: 79, 100). The Northern Estonian and Southern Estonian dialects are quite different from one another. In all of Estonian, final *n* was lost; however, in Northern Estonian the *-n* of 'first person singular' verb forms was exempted from this otherwise regular sound change, while in Southern Estonian the change took place without restrictions, as illustrated in Table 11.1. Loss of both *?* and *n* in Northern Estonian would have left the 'first person singular' and 'imperative' forms indistinct; prevention of loss of final *n* in the 'first person singular' forms maintained the distinction. In Southern Estonian, where *?* was not lost, these verb forms remained distinct and so final *n* could freely be lost in 'first person singular' verb forms as well without distress to the meaning difference.

TABLE 11.1: Estonian verb forms after certain sound changes

<i>Northern Estonian</i>	<i>Southern Estonian</i>	<i>Proto-Balto-Finnic</i>
kannan	kanna	*kanna-n 'I carry'
kanna	kanna?	*kanna-? 'Carry!'

Those who favour analogical restoration after the regular sound change must rely in this case on variation in an early stage of the change in which final *-n* was lost when the next word began with a consonant or when there was no following word, but *-n* was not yet lost when the

next word began with a vowel. They would say that, based on the instances of final *-n* before a following vowel, *-n* was restored also before a following consonant (that is, in all instances) where it served to signal the 'first person' in Northern Estonian, but that *-n* was later lost completely in all contexts in Southern Estonian (including also before following vowel-initial words) and in non-first person contexts in Southern Estonian (that is, lost now also before an initial vowel of a following word).

11.4.3 Estonian compensation for lost final *-n*

The loss of final *n* in Estonian was not blocked in all instances where its loss would have resulted in the loss of meaning distinctions. For example, the 'accusative singular' suffix was also *-n*, but this was entirely lost in the sound change which deleted final *-n*. Rather than the sound change being 'prevented' from damaging the accusative's ability to be signalled, the change applied also to the final *-n* of the accusative singular; however, the damage to the meaning side of the language was *compensated* for by other means in the language. In many nouns, the nominative and accusative forms could still be distinguished by other means in the absence of the *-n* 'accusative singular'. Final vowels in certain contexts were deleted by an earlier sound change, and many roots underwent what is called consonant gradation, essentially a change in stops in closed syllables (syllables that terminate in a consonant). Thus, for example, the 'nominative' and 'accusative' for a noun such as *kant* 'edge, border' could still be signalled in spite of the lost *n*: *kant* (< **kanta*) 'nominative singular', *kanna* (< **kanna-n* < **kanta-n*) 'accusative singular' (where the difference between *nt* and *nn*, and the presence or absence of the root-final *a*, signal the distinction between nominative and accusative which formerly was indicated by Ø 'nominative singular' versus *-n* 'accusative singular'). However, in nouns such as *kala* 'fish', consonant gradation (which did not apply to *l*) and final-vowel loss (which applied in other contexts, but not this one) could not compensate for the lost *-n* of 'accusative' to signal the difference: *kala* (< **kala*) 'nominative', *kala* (< **kala-n*) 'accusative'. However, a different sort of therapy came to be called upon to fix up the negative consequences of the sound change, namely in instances such as *kala* 'nominative' / *kala* 'accusative', where nothing in the phonological form functions to distinguish the two, the particle *ära* 'up' could be used in partial compensation for the lost 'accusative', as in *sõõn kala ära* 'I eat the fish (up)'.

11.4.4 Compensation in Caribbean Spanish

Standard Spanish freely allows independent pronouns optionally to be absent, since the bound pronominal suffixes on verbs are sufficient to indicate the subject of the verb (for example, *ando* 'I walk', *andas* 'you walk', *andamos* 'we walk', and so on), and in connected discourse the independent pronouns are usually absent except when used for emphasis. However, in numerous studies of varieties of Caribbean Spanish, it has been observed that there is a much higher frequency of occurrence of the independent pronouns *tú* 'you (familiar)', *usted* 'you (formal)', *él* 'he' and *ella* 'she' than in other varieties of Spanish, and internally within these varieties these subject pronouns are much more frequent than the other subject pronouns (than *yo* 'I', *nosotros* 'we', *ustedes* 'you (plural)' and *ellos* 'they'). This is explained as therapeutic compensation in the wake of disruptive sound changes. In these varieties of Spanish, final *s* is changed to *h* and further to $\emptyset$ with extreme frequency (approaching 100 per cent of occurrences for some speakers in colloquial contexts). This means that verb forms which are quite distinct in Standard Spanish, such as *andas* 'you walk' versus *anda* 'he/she walks', fail to be distinct if the final *s* is not realised. The loss of this distinction is compensated for through the more rigid use of the independent pronouns, especially *tú* 'you (familiar)', precisely where they are needed to help maintain the formal difference in verbs, now *tú anda* 'you walk' versus *él anda* 'he walks' in the colloquial language. This greater use of *tú* to compensate for the lost *-s* pronominal suffix parallels the change in French, where French once worked like modern Standard Spanish, with *vas* 'you go' versus *va* 'he/she goes', but as a result of sound changes which affected final consonants in French, the *-s* of the 'you' forms was completely lost and in French today the independent pronouns are obligatory, /tu va/ 'you go' (spelled *tu vas*) versus /il va/ 'he goes'. That is, the use of independent pronouns was made obligatory to compensate for the meaning contrast that would otherwise be lost with the loss of the final *-s* of second person.

11.4.5 Lapp compensation for lost final *-n*

Lapp (another Finno-Ugric language) also lost final *-n* in a change which was quite independent of Estonian's loss of final *-n*. However, as in Estonian, this Lapp loss also affected certain grammatical cases – the 'genitive singular' suffix *-n* was lost. As in Estonian, consonant gradation in closed syllables could compensate for the loss in some instances. Since the former *-n* 'genitive singular' constituted a consonant and

therefore closed syllables, pairs formerly distinguished primarily by $\emptyset$ 'nominative' versus $-n$ 'genitive' could still be distinguished after the loss of final $-n$ by non-gradated consonants in the stem in the nominative form and gradated consonants in the genitive form, as in Northern Lapp *jokkâ* 'river (nominative singular)' : *jogâ* 'river (genitive singular)'. However, such compensation was not available for all nouns, since many contained no stops and so originally underwent no consonant gradation. In such cases, Lapp underwent a therapeutic change whereby the consonant gradation pattern was extended to these consonants which earlier had not been subject to gradation, as seen here in the change from Proto-Lapp to Southern Lapp:

**kōlē* > *guolle* 'fish (nominative singular)'

**kōlē-n* > *guole* 'fish's (genitive singular)'.

Consonant gradation was extended to consonants, such as *l* which formerly had not undergone gradation, to signal the difference between 'nominative' and 'accusative' (Korhonen 1981: 148).

11.4.6 Avoidance of pernicious homophony

Discussions of explanation of change in the linguistic literature often involve the concept of avoidance of homophony and refer to examples attributed to it. Therefore, *avoidance of homophony* will be the final example before we concentrate more directly on notions of how linguistic change may be explained.

While scholars opposed to functional explanations in linguistic changes have never been friends of avoidance of pernicious homophony as an explanation of certain changes, instances of such avoidance are nevertheless well documented. Avoidance of homophony can take several forms.

Lexical replacement and loss. The best-known cases involve lexical replacement or loss. A famous example comes from France, where in Gascony reflexes of Latin *gallus* 'rooster' (commonly *gal* in southern France) were replaced in exactly those dialects found within the area where a sound change took place in which original *ll* changed to *t*, where *gal* 'rooster' (from *gallus*) would have become *gat*, leaving *gat* 'rooster' homophonous with *gat* 'cat'. This homophony was avoided by the replacement of 'rooster' with other forms which formerly meant 'pheasant' or 'vicar', and this allowed 'cat' and 'rooster' to be signalled by phonetically distinct forms. Without appeal to avoidance of homophony, it would be difficult to explain why it is precisely and only in the

area where the sound change would have left 'rooster' and 'cat' homophonous that this lexical replacement has taken place (Gilliéron 1921; Gilliéron and Roques 1912). It will be helpful to look at a few other examples attributed to the avoidance of homophony.

(1) A much-cited example involves the fact that English had two words, *quean* 'low woman' and *queen*, but the former has disappeared nearly everywhere because of homophonic clash after Middle English [ɛ:] (of *quean*) and [e:] (of *queen*) merged, especially in East Midlands and Southeast English dialects. Interestingly, in the south-western area, the two vowel sounds remained distinct and both words, *quean* and *queen*, still survive there, where there is no homophonic clash between them, but survive nowhere where they would have become homophonous (Menner 1936: 222-3).

(2) In Standard German, *Fliege* [fli:gə] 'fly' and *Flöhe* [flø:ə] 'fleas' are phonetically distinct, but in certain German dialects the two would have become homophonous through regular sound changes (loss of intervocalic *g* and changes in the vowels). In this case, *Fliege* for 'fly' was replaced by *Mücke*, which had originally meant 'gnat, mosquito', as it still does in Standard German (Bach 1969: 168).

(3) In southern French dialects, reflexes of the Latin word *serrāre* 'to saw' survive today only in a few scattered areas. It has disappeared because it became homophonous with the French reflexes of Latin *serāre* 'to close'. In these areas where *ser(r)āre* 'to saw' disappeared, it has been replaced by words which come from Latin *sectāre* 'to cut', *secāre* 'to cut, divide', *resēcāre* 'to cut back, curtail' (Palmer 1972: 331).

(4) Due to the sound change in which initial *h* was lost before other consonants, the Old English word *hrūm* 'soot', homophonous after the change with *rūm* 'room', was simply dropped from the language, and *soot* now exclusively carries that meaning.

Prevention. Avoidance of homophony can also sometimes block otherwise regular sound changes from taking place in certain forms. For example, in some German dialects, regular sound changes (the loss of intervocalic *g* and the unrounding of *ü*) would have left *liegen* [li:gən] 'to lie (down)' and *lügen* [ly:gən] 'to lie (tell falsehoods)' homophonous, but these otherwise regular sound changes were blocked in these words to preserve the distinction between these two common words (Öhmann 1934). Not all linguists accept proposals which call upon prevention as a way of dealing with problems of impending homophony. In this German example, some would argue that it is not that the changes were blocked and prevented from taking place in these words so much as that the changes took place and the sounds were later restored to these words

by analogy based on related verb forms in which these sounds appear. (See Anttila 1989: 182 for other examples.)

Deflection. Another way by which some languages have avoided certain uncomfortable homophonies is through irregular or spontaneous changes in one or more of the homophonous forms, the result of which maintains a distinction between the forms that clash. A simple example that illustrates how such deflection can come about is seen in the euphemistic *fudge!* as an expletive to avoid the stronger obscene expletive which begins with the same sounds but ends with a different consonant. A change of this sort involving the homophonous *quean/queen* pair of words took place in some locations. In some northern English dialects, an initial *wh* [ʍ] was substituted for the *qu* [kw] of *quean* (but not of *queen*), and both words survive; the homophonic conflict is avoided through this special, sporadic change. The Middle English form for 'rabbit', variously spelled as *cony*, *coney* or *cunny*, was considered too close in pronunciation to a phonetically similar obscenity for comfort and so was changed by deflection to *bunny*.

11.4.7 Loss (neglect)

As is well known, many cases of homophony are not prevented, deflected or replaced; in these, the sound changes create homophonous forms that remain in the language – we see this in English in such sets of words as *sun/son*, *eye/I*, *rock* (stone)/*rock* (move back and forth), *to/too/two* and so on. An example from German illustrates a change in which neither blocking nor direct therapy was exercised, and as a consequence a portion of the grammar was just lost. Old and Middle High German marked some objects as partitives (only partially, not fully affected) by means of the genitive case, as Middle High German:

Ich will im mîn-es brôt-es geben

I want to.him my-Genitive bread-Genitive to.give

'I want to give him some of my bread' (Ebert 1978: 52).

The loss of this partitive construction is attributed to phonological changes which affected inflectional endings. Due to phonological merger, in neuter adjectives the former *-es* 'genitive' (of which *mînes* is an instance) and *-ez* 'nominative/accusative' were no longer distinguishable in many contexts. The old *-es* ('genitive') with partitive interpretation was seen, as a result, as 'accusative' with full direct object interpretation in these instances. The outcome was that the partitive object construction was simply lost from German as a result of the phonological

merger which left the genitive and accusative undifferentiated – neither prevention nor compensation occurred to rescue it.

As the discussion of these examples (several of them well known in the literature) shows, a broad view of language will be required in order to explain linguistic change, a view which must include internal factors, external factors, the structure of the language as a whole and how different parts of the language interact with one another, the communicative and social functions of the language, the role of the individual, the role of society/the speech community, and more – that is, the complex interaction and competition among a large number of factors. Let us look at some views of what it means to ‘explain’ linguistic change, with the examples just considered as background for the discussion.

11.5 Explanation and Prediction

The recognition of a large number of interacting and competing causal factors in language change means that at present we are unable fully to predict linguistic change. Some scholars conclude from this that it is impossible to explain linguistic change, since they equate ‘explain’ with ‘predict’, as required in some approaches to the philosophy of science. These scholars believe that the need to postulate competing principles and multiple causes renders law-like explanations of the sort sought in physics and chemistry impossible in historical linguistics. Others are more optimistic, believing that the current unpredictability may ultimately be overcome through research to identify causal factors and to understand the complex ways in which these factors interact. This more optimistic approach hopes for prediction (for law-like explanations) in the future, to the extent that they may be possible. On the other hand, some scholars recognise that absolute predictability may not be an appropriate requirement, since evolution by natural selection in biology is almost universally recognised as scientifically legitimate explanation, though it does not ‘predict’ the evolutionary changes that it explains.

In the view held by many historical linguists, the overall outcome of changes is usually (though not always) in the direction of maintaining or achieving the language’s functional needs (a loose but hopefully useful notion about languages being able to serve the communicative needs of speech communities). These functional needs may be served in some cases by preventing or deflecting certain changes in order to avoid their detrimental effects on the language, or by permitting the disruptive changes to take place but then following them with subsequent compensatory (therapeutic) changes which rectify the situation. Of course,

not all historical linguists agree with all of this; some insist that 'languages do not practise prophylaxis [no prevention or blocking], only therapy' (first said by Hermann Paul in the late nineteenth century, and reasserted more recently by linguists such as Paul Kiparsky (1982: 190), William Labov (1994) and David Lightfoot (1979: 123)) – that is, they accept the compensatory changes, therapy after a change has had negative consequences, but reject the interpretations which involve prevention and deflection in the examples considered above.

From the point of view of scholars who insist on predictability for explanation, it might be objected that appeal to such things in the examples above as prevention (prophylaxis, to head off the ill effects of some changes) and compensation (therapy, to fix things up after deleterious changes) cannot predict when such changes will take place, what exact form they may take, or when they may fail to occur even though the appropriate condition may have been present. It is important to distinguish what is impossible to predict (for example, that a change will occur, which change will occur, when a change will occur, and so on) from what is possible to predict (the nature of the changes that do occur, the conditions under which they can occur, what changes cannot occur).

Certain predictions may in fact already be possible, though these are not necessarily the mechanistic causal or deterministic kind known from physics or astronomy which some scholars would insist on for any explanation in any field to be considered valid. For example, to use an analogy (from Wright 1976), given certain circumstances, we may be able to determine in an objective manner that a rabbit will flee from a pursuing dog and that the paths which the rabbit follows are indeed appropriate for attempting to escape the dog, but we may not be able to predict the particular escape route which it will follow. Similarly, given certain conditions, we may be able to predict that a language (or more accurately, its speakers) may resort to one of a variety of alternative means for resolving the conflicting consequences of changes, though we may not be able to predict the particular 'escape route' that will be taken, be it prevention of sound change (as claimed in the morphological-conditioning view of the Greek in 11.4.1 and first Estonian example in 11.4.2 and for some of the cases of avoidance of homophony in 11.4.6), or compensation (as in the Lapp example in 11.4.5, the second Estonian case in 11.4.3, and in Caribbean Spanish in 11.4.4 above), or deflection (as in some of the instances of homophony avoidance in 11.4.6). That is, there are different kinds or degrees of prediction: weak prediction (something is likely to happen), strong prediction (something will happen, though when and where is unclear), and absolute prediction (something

will happen at a specifiable time and place) (Aitchison 1987: 12). We may be able to obtain some degree of predictability without needing to insist on the strongest absolute sort of prediction.

That more than one cause is frequently involved in a particular change also makes prediction difficult. Change within complex systems (languages, living organisms, societies) involves many factors which are interrelated in complex ways. Given that multiple causes frequently operate simultaneously in complex ways to bring about particular linguistic changes, to explain linguistic change, we must investigate the multiple causes and how they jointly operate in some cases and compete in others to determine the outcome of linguistic change.

Because we do not yet understand fully the complex interactions among the causal factors, we cannot predict all outcomes. The internal causal factors (mentioned above) rely on the limitations and resources of human speech production and perception, physical explanations of change stemming from the physiology of human speech organs, and cognitive explanations involving the perception, processing or learning of language. These internal explanations are largely responsible for the natural, regular, universal aspects of language and language change. However, even well-understood internal causal factors can compete in their interactions in ways which make prediction difficult and for the present out of reach. Consider another analogy, that of a car smashed against a tree, where the following conditions obtain: it is dark and foggy (poor visibility), the road is narrow and covered with ice (poor driving conditions), the driver is intoxicated and suffers from several physical disabilities (driver impaired), and the car was in poor operating condition (worn tyres, bad brakes, loose steering), the driver was exceeding the speed limit and not watching the road at the time of the accident (poor judgement), and finally, the tree happened to be situated at just the spot where the vehicle left the road (chance). In such a situation, it would not be possible to determine a unique cause (or even a joint interaction of causes) of the accident with sufficient precision to allow us to predict the crash. Linguistic changes are often like this crash, where competing or overlapping causal factors may be at play, but precise prediction of whether a change will take place (will the car in fact crash?) or when and how a change (a crash) will be realised is not fully possible. Still, it would be foolish to dismiss the probable or potential causal factors as irrelevant to the event (a car crash, a linguistic change). From the study of many other crashes, we may be certain that each of these is capable of contributing to car accidents.

At this stage of our understanding, we cannot ignore any potential

causal factor, such as prevention or therapy in the examples above, and thus cut off inquiry before we arrive at a fuller picture of how and why changes occur. It will only be through further extensive investigation of the interaction of the various overlapping and competing factors that are suspected of being involved in linguistic changes that we will come to be able to explain linguistic change more fully.

Moreover, even if mechanistic (internal) explanations were more readily available for linguistic change, that would not necessarily invalidate other sorts of explanations. There are different kinds of legitimate explanation. Consider one more analogy (from Wright 1976: 44). To answer the question 'why did the window break?' with 'because John slammed it' is a completely adequate answer/explanation, even if shock waves and crystal structure may lie behind the breaking at some other level of interpretation. There are contexts in which an answer of 'because of a certain causal factor *x*' is correct and adequate, even if there may be deeper, more mechanistic causal things which one could mention. For example, consider the constraint 'no language will assume a form in violation of such formal principles as are postulated to be universal in human languages' (Weinreich et al. 1968: 100) (mentioned already in Chapter 7). That languages cannot undergo changes which would violate universals is an adequate explanation in certain contexts of inquiry even if we discover the aspects of human physiology and cognition (mechanistic, internal factors) which explain the universals themselves. The existence of the underlying internal explanation of universals at some level does not invalidate explanations such as 'because languages do not undergo changes which would violate universals' at some other level. Even if we may ultimately come to understand more fully the aspects of human cognition which underlie avoidance of homophony or therapeutic compensation in the wake of other disruptive changes, and the like, at another level these factors remain valid in explanations for the changes which they deal with.

Areal Linguistics

Life is a foreign language: all men mispronounce it.

(Christopher Morley)

12.1 Introduction

Areal linguistics, related to borrowing (Chapter 3), is concerned with the diffusion of structural features across language boundaries within a geographical area. This chapter defines areal linguistics, surveys the features of a few of the better-known linguistic areas of the world, and then addresses issues concerning how areally diffused features are identified, how linguistic areas are established, and what impact areal linguistics has on other aspects of historical linguistics – its implications for subgrouping, reconstruction and proposals of distant genetic relationship. Areal linguistics is very important because the goal of historical linguistics is to determine the full history of languages, to find out what really happened. The full history includes understanding both inherited traits (traits shared in genetically related languages because they come from a common parent language) and diffused features (traits shared because of borrowing and convergence among neighbouring languages). This is important in many ways. For example, in order to reconstruct proto-languages accurately or to determine family relationships, it is necessary to distinguish material which is borrowed from that which is inherited from a common ancestor.

12.2 Defining the Concept

The term *linguistic area* refers to a geographical area in which, due to borrowing and language contact, languages of a region come to share

certain structural features – not only borrowed words, but also shared elements of phonological, morphological or syntactic structure. Linguistic areas are also referred to at times by the terms *Sprachbund*, *diffusion area*, *adstratum relationship* and *convergence area*. The central feature of a linguistic area is the existence of structural similarities shared among languages of a geographical area (where usually some of the languages are genetically unrelated or at least are not all close relatives). It is assumed that the reason why the languages of the area share these traits is because at least some of them are borrowed.

The studies of linguistic areas that have been undertaken are of two sorts. The more common approach, called *circumstantialist*, mostly just lists similarities found in the languages of a geographical area, allowing the list of shared traits to suggest diffusion. In this approach, firm evidence that the shared traits actually are due to diffusion is typically not required. Circumstantialist areal linguistics has been criticised, since it does not eliminate chance, universals, and possibly undetected genetic relationships as alternative possible explanations for shared traits. The other approach, called *historicist*, attempts to find concrete evidence showing that the shared traits are diffused (borrowed). The historicist approach is preferred because it is more rigorous and reliable, although the lack of clear evidence in many cases makes it necessary to fall back on the less reliable circumstantialist approach (Campbell 1985a).

While some linguistic areas are reasonably well established, more investigation is required for nearly all of them. Some other linguistic areas amount to barely more than preliminary hypotheses. Linguistic areas are often defined, surprisingly, by a rather small number of shared linguistic traits.

12.3 Examples of Linguistic Areas

A good way to get a solid feel for linguistic areas and how they are defined is to look at some of the better-known ones. In what follows, some are presented with the more important of the generally accepted defining traits shared by the languages of each linguistic area.

12.3.1 The Balkans

The languages of the Balkans linguistic area are Greek, Albanian, Serbo-Croatian, Bulgarian, Macedonian and Romanian (to which some scholars also add Romani [the language of the Gypsies] and Turkish). Some salient traits of the Balkans linguistic area are: (1) A central vowel

/i/ (or /ə/) (not present in Greek or Macedonian). (2) Syncretism of dative and genitive (dative and genitive cases have merged in form and function); this is illustrated by Romanian *fetei* 'to the girl' or 'girl's' (compare *fată* 'girl'; *ă* represents a short or reduced *a*), as in *am data o carte fetei* 'I gave the letter to the girl' and *frate fetei* 'the girl's brother'. (3) Postposed articles (not in Greek); for example, Bulgarian *maž-ət* 'the man' / *maž* 'man'. (4) Periphrastic future (futures signalled by an auxiliary verb corresponding to 'want' or 'have'; not in Bulgarian or Macedonian), as in Romanian *voi fuma* 'I will smoke' (literally 'I want smoke') and *am a cînta* 'I will sing' (literally 'I have sing'). (5) Periphrastic perfect (with an auxiliary verb corresponding to 'have'). (6) Absence of infinitives (instead, the languages have constructions such as 'I want that I go' for 'I want to go'); for example, 'give me something to drink' has the form corresponding to 'give me that I drink', as in: Romanian *dă-mi să beau*, Bulgarian *daj mi da pija*, Tosk Albanian *a-më të pi*, Greek *dós mu na pjó*. (7) Use of a personal pronoun copy of animate objects so that the object is doubly marked, as illustrated by Romanian *i-am scris lui Ion* 'I wrote to John', literally 'to.him-I wrote him John', and Greek *ton vlépo ton jáni* 'I see John', literally 'him.Acc I see the/him.Acc John' (Joseph 1992; Sandfeld 1930).

12.3.2 South Asia (Indian subcontinent)

This area is composed of languages belonging to the Indo-Aryan, Dravidian, Munda and Tibeto-Burman families. Some traits shared among different languages of the area are: (1) retroflex consonants, particularly retroflex stops; (2) absence of prefixes (except in Munda); (3) presence of a dative-subject construction; (4) Subject-Object-Verb (SOV) basic word order, including postpositions; (5) absence of a verb 'to have'; (6) the 'conjunctive or absolutive participle' (tendency for subordinate clauses to have non-finite verbs and to be preposed; for example, relative clauses precede their heads); (7) morphological causatives; (8) so-called 'explicator compound verbs' (where a special auxiliary from a limited set is said to complete the sense of the immediately preceding main verb, and the two verbs together refer to a single event); and (9) sound-symbolic (phonaesthetic) forms based on reduplication, often with *k* suffixed. Some of these proposed areal features are not limited to the Indian subcontinent, but can be found in neighbouring languages (for example, SOV basic word order is found throughout much of Eurasia and northern Africa) and in languages in many other parts of the world, while some of the other traits are not necessarily independent of one

another (for example, languages with SOV basic word order tend also to have non-finite subordinate clauses, especially relative clauses, and not to have prefixes). (Compare Emeneau 1980.)

12.3.3 Mesoamerica

The language families and isolates which make up the Mesoamerican linguistic area are: Nahuatl (branch of Uto-Aztecan), Mixe-Zoquean, Mayan, Xincan, Otomanguean, Totonacan, Tarascan, Cuitlatec, Tequistlatecan and Huave. Five areal traits are shared by nearly all Mesoamerican languages, but not by neighbouring languages beyond this area, and these are considered particularly diagnostic of the linguistic area. They are: (1) Nominal possession of the type *his-dog the man* 'the man's dog', as illustrated by Pipil (Uto-Aztecan): *i-pe:lu ne ta:kat*, literally 'his-dog the man'. (2) Relational nouns (locative expressions composed of noun roots and possessive pronominal affixes), of the form, for example, *my-head* for 'on me', as in Tz'utujil (Mayan): (*č*)*r-i:x* 'behind it, in back of it', composed of *č*- 'at, in', *r*- 'his/her/its' and *i:x* 'back', contrasted with *č-w-i:x* 'behind me', literally 'at-my-back'. (3) Vigesimal numeral systems based on combinations of twenty, such as that of Chol (Mayan): *hun-k'al* '20' (1x20), *čaʔ-k'al* '40' (2x20), *uʔ-k'al* '60' (3x20), *hoʔ-k'al* '100' (5x20), *hun-bahk'* '400' (1-bahk'), *čaʔ-bahk'* '800' (2x400) and so on. (4) Non-verb-final basic word order (no SOV languages) – although Mesoamerica is surrounded by languages both to the north and south which have SOV (Subject–Object–Verb) word order, all languages within the linguistic area have VOS, VSO or SOV basic order. (5) A large number of loan translation compounds (calques) are shared by the Mesoamerican languages; these include examples such as 'boa' = 'deer-snake', 'egg' = 'bird-stone/bone', 'lime' = 'stone(-ash)', 'knee' = 'leg-head' and 'wrist' = 'hand-neck'. Since these five traits are shared almost unanimously throughout the languages of Mesoamerica but are found almost not at all in languages outside of Mesoamerica, they are considered strong evidence in support of the validity of Mesoamerica as a linguistic area.

Additionally, a large number of other features are shared among several Mesoamerican languages, but are not found in all the languages of the area, while other traits shared among the Mesoamerican languages are found also in languages beyond the borders of the area. Some widely distributed phonological phenomena of these sorts are: (1) Devoicing of final sonorant consonants (*l*, *r*, *w*, *y*) (K'ichean, Nahuatl, Pipil, Xincan, Totonac, Tepehua, Tarascan and Sierra Popoluca), as for example in Nahuatl /no-mi:l/ [no-mi:] 'my cornfield'. (2) Voicing of obstruents

after nasals (most Otomanguean languages, Tarascan, Mixe-Zoquean, Huave, Xincan), as in Copainalá Zoque /n-tik/ [ndik] 'my house'. (3) Predictable stress; most Mesoamerican languages have predictable stress (contrastive stress is rare in the area). Some of the languages share the rule which places the stress on the vowel before the last (rightmost) consonant of the word ($V \rightarrow \acute{V} / _ C(V) \#$) (Oluta Popoloca, Totontepec Mixe, Xincan and many Mayan languages (by default in these Mayan languages, where stress falls on final syllables, but roots do not end in vowels)). (4) Inalienable possession of body parts and kinship terms (in almost all Mesoamerican languages, but this feature is characteristic of many languages throughout the Americas). (5) Numeral classifiers (many Mayan languages, plus Tarascan, Totonac, Nahuatl and so on), as in Tzeltal (Mayan) *qf-tehk te?* [three plant-thing wood] 'three trees', *qf-k'as te?* [three broken-thing firewood] 'three chunks of firewood'. (6a) Noun-incorporation, a construction where a general nominal object can become part of the verb, is found in some Mayan languages (Yucatec, Mam), Nahuatl and Totonac. An example is Nahuatl *ni-tlaqkal-čiwa* [I-tortilla(s)-make] 'I make tortillas'. (6b) Body-part incorporation (Nahuatl, Totonac, Mixe-Zoquean, Tlapanec, Tarascan), a sort of noun-incorporation where specific forms for body parts can be incorporated in the verb, usually as instrumentals, though sometimes also as direct objects, as for example in Pipil (Uto-Aztec): *tan-kwa* [tooth-eat] 'bite', *ikfi-ahsi* [foot-arrive] 'to reach, overtake', *mu-yaka-pitsa* [Reflexive-nose-blow] 'to blow one's nose'. This type of construction is found also in various languages elsewhere in the Americas. (7) Directional morphemes ('away from' or 'towards') incorporated into the verb (Mayan, Nahuatl, Tequistlatec, Tarascan, some Otomanguean languages, Totonac), as in Kaqchikel (Mayan) *y-e-be-n-kamisax* [Aspect-them-thither-I-kill] 'I'm going there to kill them'. (8) An inclusive-exclusive contrast in the pronoun system (Chol, Mam, Akateko, Jakalteko, Chocho, Popoloca, Ixcatec, Otomí, Mixtec, Trique, Chatino, Yatzachi Zapotec, Tlapanec, Huave, several Mixe-Zoquean languages), as, for example, in Chol (Mayan) *honon la* 'we (inclusive)', *honon lohon* 'we (exclusive)'. (9a) 'Zero' copula (no form of the verb 'to be'). An overt copula is lacking from most Mesoamerican languages in equational constructions, as in K'iche' (Mayan) *saq le xah* [white the house] 'the house is white'. This feature is also found widely elsewhere in the Americas. (9b) A pronominal copular construction (Mayan, Nahuatl, Chocho, Chinantec, Mazatec, Otomí, several Mixe-Zoquean languages). Copular sentences with pronominal subjects are formed with pronominal affixes attached directly to the complement, as in Q'eqchi' (Mayan) *iq-at* [woman-you]

'you are a woman', *kwinq-in* [man-I] 'I am a man'; Pipil *ti-siwa:t* [you-woman] 'you are a woman' (Campbell, Kaufman and Smith-Stark 1986).

12.3.4 The Northwest Coast of North America

As traditionally defined, the Northwest Coast linguistic area includes Tlingit, Eyak, the Athabaskan languages of the region, Haida, Tsimshian, Wakashan, Chimakuan, Salishan, Alsea, Coosan, Kalapuyan, Takelma and Lower Chinook. This is the best-known of North American linguistic areas. The languages of this area are characterised by elaborate systems of consonants, which include series of glottalised stops and affricates, labiovelars, multiple laterals (*l*, *ɬ*, *tl*, *tl'*) and uvular stops in contrast to velars. The labial consonant series typically contains fewer consonants than those for other points of articulation (labials are completely lacking in Tlingit and Tillamook and are quite limited in Eyak and most Athabaskan languages); in contrast, the uvular series is especially rich in most of these languages. The vowel systems are limited, with only three vowels (*i*, *a*, *o*, or *i*, *a*, *u*) in several of the languages, and only four vowels in others. Several of the languages have pharyngeals (*ʕ*, *ħ*), and most have glottalised resonants and continuants. Shared morphological traits include extensive use of suffixes; nearly complete absence of prefixes; reduplication processes (often of several sorts, signalling various grammatical functions, for example iteration, continuative, progressive, plural, collective and so on); numeral classifiers; alienable/inalienable oppositions in nouns; pronominal plural; nominal plural (distributive plural is optional); verbal reduplication signifying distribution, repetition and so on; suffixation of tense-aspect markers in verbs; evidential markers in the verb; and locative-directional markers in the verb; plus masculine/feminine gender (shown in demonstratives and articles); visibility/invisibility opposition in demonstratives; and nominal and verbal reduplication signalling the diminutive. Aspect is relatively more important than tense (and aspect includes at least a momentaneous/durative dichotomy). All but Tlingit have passive-like constructions. The negative appears as the first element in a clause regardless of the usual word order. Northwest Coast languages also have lexically paired singular and plural verb stems (that is, an entirely different lexical root may be required with a plural subject from the root used with a singular subject).

Some other traits shared by a smaller number of Northwest Coast languages include: (1) a widely diffused sound change of **k* > *č*, which affected Wakashan, Salishan, Chimakuan and some other Northwest Coast languages. (2) Tones (or pitch-accent contrasts), found in a number

of the languages (Tlingit, Haida, Bella Bella, Upriver Halkomelem, Quileute, Kalapuyan and Takelma). (3) Ergative alignment in several of the languages (where the subject of intransitive verbs and the object of transitives have similar morphosyntactic marking, while the subject of transitive verbs is marked differently) (Tlingit, Haida, Tsimshian, some Salishan languages, Sahaptin, Chinookan, Coosan). (4) 'Lexical suffixes', found in a number of the languages (Wakashan and Salishan); lexical suffixes designate such familiar objects (which are ordinarily signalled with full lexical roots in most other languages) as body parts, geographical features, cultural artifacts and some abstract notions. Wakashan, for example, has some 300 of these. (5) In the grammar of these languages, one finds a severely limited role for a contrast between nouns and verbs as distinct categories (some assert the total lack of a noun-verb distinction for some of the languages).

The sub-area of the Northwest which lacks primary nasals includes the languages Twana and Lushootseed (Salishan languages), Quileute (Chimakuan) and Nitinat and Makah (Nootkan, of the broader Wakashan family). The last two, for example, have changed their original **m > b*, **ṁ > b'*, **n > d* and **ṅ > d'* due to areal pressure, but closely related Nootka has retained the original nasals (Haas 1969b; Campbell 1997a: 333-4).

12.3.5 The Baltic

The Baltic area is defined somewhat differently by different scholars, but includes at least Balto-Finnic languages (especially Estonian and Livonian), Latvian, Latgalian, Lithuanian and Baltic German. Some would include Swedish, Danish and dialects of Russian as well. The Baltic area is defined by several shared features, some of which are: (1) first-syllable stress; (2) palatalisation of consonants; (3) a tonal contrast; (4) partitive case (to signal partially affected objects, equivalent to, for example, 'I ate (some) apple' found in Balto-Finnic, Lithuanian, Latvian and some dialects of Russian); (5) evidential voice ('John works hard [it is said]': Estonian, Livonian, Latvian, Lithuanian); (6) prepositional verbs (German *aus-gehen* [out-to.go] 'to go out': Livonian, German, Karelian dialects); (7) Subject-Verb-Object (SVO) basic word order; and (8) adjectives agree in case and number with the nouns which they modify (see Zeps 1962).

12.3.6 Ethiopia

Languages of the Ethiopian linguistic area include Cushitic, Ethiopian Semitic, Omotic, Anyuak, Gumuz and others. Among the traits which

they share are the following: (1) SOV basic word order, including post-positions; (2) subordinate clause preceding main clause; (3) gerund (non-finite verb in subordinate clauses, often inflected for person and gender); (4) a 'quoting' construction (a direct quotation followed by some form of 'to say'); (5) compound verbs (consisting of a noun-like 'preverb' and a semantically empty auxiliary verb); (6) negative copula; (7) plurals of nouns are not used after numbers; (8) gender distinction in second and third person pronouns; (9) reduplicated intensives; (10) different present tense marker for main and subordinate clauses; (11) the form equivalent to the feminine singular is used for plural concord (feminine singular adjective, verb or pronoun is used to agree with a plural noun); (12) a singulative construction (the simplest noun may be a collective or plural and it requires an affix to make a singular) (Ferguson 1976).

12.4 How to Determine Linguistic Areas

On what basis is it decided that something constitutes a linguistic area? Scholars have at times utilised the following considerations and criteria: the number of traits shared by languages in a geographical area, bundling of the traits in some significant way (for example, clustering at roughly the same geographical boundaries), and the weight of different areal traits (some are counted differently from others on the assumption that some provide stronger evidence than others of areal affiliation).

With respect to the number of areal traits necessary to justify a linguistic area, in general the rule is: the more, the merrier – that is, linguistic areas in which many diffused traits are shared among the languages are generally considered more strongly established; however, some argue that even one shared trait is enough to define a weak linguistic area (Campbell 1985a). Regardless of debate over some arbitrary minimum number of defining traits, it is clear that some areas are more securely established because they contain many shared traits, whereas other areas may be weaker because their languages share fewer areal traits. In the linguistic areas considered above, we see considerable variation in the number and kind of traits they share which define them.

With respect to the relatively greater weight or importance attributed to some traits than to others for defining linguistic areas, the borrowed word order patterns in the Ethiopian linguistic area provide an instructive example. Ethiopian Semitic languages exhibit a number of areal traits diffused from neighbouring Cushitic languages. Several of these individual traits, however, are interconnected due to the borrowing of the SOV (Subject–Object–Verb) basic word order patterns of Cushitic languages

into the formerly VSO Ethiopian Semitic languages. Typologically, the orders Noun–Postposition, Verb–Auxiliary, Relative Clause–Head Noun and Adjective–Noun are all correlated and they tend to co-occur with SOV order cross-linguistically. If the expected correlations among these constructions are not taken into account, we might be tempted to count each one as a separate shared areal trait. Their presence in Ethiopian Semitic languages might seem to reflect several different diffused traits (SOV counted as one, Noun–Postposition as another, and so on), and they could be taken as several independent pieces of evidence defining a linguistic area. However, from the perspective of expected word order co-occurrences, these word order arrangements may not be independent traits, but may be viewed as the result of the diffusion of a single complex feature, the overall SOV word order type with its various expected coordinated orderings in typologically interrelated constructions. However, even though the borrowing of SOV basic word order type may count only as a single diffused areal trait, many scholars would still rank it as counting for far more than some other individual traits based on the knowledge of how difficult it is for a language to change so much of its basic word order by diffusion.

With respect to the criterion of the bundling of areal traits, some scholars had thought that such clustering at the boundaries of a linguistic area might be necessary for defining linguistic areas correctly. However, this is not correct. Linguistic areas are similar to traditional dialects in this regard (see Chapter 7). Often, one trait may spread out and extend across a greater territory than another trait, whose territory may be more limited, so that their boundaries do not coincide ('bundle'). This is the most typical pattern, where languages within the core of an area may share many features, but the geographical extent of the individual traits may vary considerably one from another. However, in a situation where the traits do coincide at a clear boundary, rare though this may be, the definition of a linguistic area to match their boundary is relatively secure. As seen earlier, several of the traits in the Mesoamerican linguistic area do have the same boundary, but in many other areas, the core areal traits do not have the same boundaries, offering no clearly identifiable outer border of the linguistic area in question.

12.5 Implications of Areal Linguistics for Linguistic Reconstruction and Subgrouping

Areal diffusion can have important implications for reconstruction and for subgrouping within known language families (see Chapter 6). Nootkan

provides a good example which illustrates this. The sound correspondences upon which Nootkan subgrouping is based are given in Table 12.1 (some of which have been seen in other chapters). Nitinat and Makah

TABLE 12.1: Nootkan sound correspondences

	<i>Makah</i>	<i>Nitinat</i>	<i>Nootka</i>	<i>Proto-Nootkan</i>
(1)	b	b	m	*m
(2)	b'	b'	m̥	*m̥
(3)	d	d	n	*n
(4)	d'	d'	n̥	*n̥
(5)	q'	ʕ	ʕ	*q
(6)	q' ^w	ʕ	ʕ	*q' ^w
(7)	χ ^w	χ ^w	ħ	*χ ^w
(8)	χ	χ	ħ	*χ

(Haas 1969b)

appear to share the innovation which changed nasals to corresponding voiced stops (in (1–4)), while Nitinat and Nootka appear to share the change of the glottalised uvulars to pharyngeals (in (5) and (6)). Makah and Nitinat also share the retention of uvular fricatives, which Nootka has changed to a pharyngeal (in (7) and (8)); however, shared retentions are not valid evidence for subgrouping (see Chapter 6). That is, one innovation (denasalisation) suggests a subgrouping of Makah–Nitinat, with Nootka as more distantly related, while the other innovation (pharyngealisation) suggests Nitinat–Nootka, with Makah less closely related. This seeming impasse is solved when we take into account the fact that the absence of nasals is an areal feature shared by several other languages of the area; it diffused into both Makah and Nitinat under areal pressure and is thus not solid evidence of a shared common development before the languages separated, but rather was reached independently. The innovation shared by Nitinat and Nootka of glottalised uvulars changing to pharyngeals (in (5) and (6)) is real evidence of subgrouping – a true (non-diffused) shared innovation. So, Nitinat and Nootka together constitute one branch of the family, Makah the other branch. Moreover, with respect to areal implications for reconstruction, if we did not know about the areal diffusion in this case, we might be tempted to reconstruct the voiced stops in Proto-Nootkan and postulate a change of these to nasals in Nootka (for (1–4)), getting it wrong in this case. Thus, recognition of areal linguistic traits can be important for how we classify (sub-group) and how we reconstruct.

12.6 Areal Linguistics and Proposals of Distant Genetic Relationship

Unfortunately, it is not uncommon to find cases of similarities among languages which are in reality due to areal diffusion but which are mistakenly taken to be evidence of a possible distant family relationship among the languages in question. One example will be sufficient to illustrate this. The Mosan hypothesis proposes a genetic connection between the Salishan, Wakashan and Chimakuan language families of the Northwest Coast of North America. Several scholars had noted structural similarities among these languages and a number accepted Mosan as a genetic grouping, though today this hypothesis has for the most part been abandoned. A big part of why the Mosan hypothesis was not found convincing has to do with the fact that much of the evidence originally presented in its favour turns out to be widely borrowed traits of the Northwest Coast linguistic area. For example, Morris Swadesh (1953) presented sixteen shared structural similarities in support of the proposed Mosan genetic grouping, but most of these features turn out to be traits of the linguistic area (others of Swadesh's traits are typologically expected correlations with other traits and are widely found in languages throughout the world, not just in putative 'Mosan' languages).

For illustration's sake, we look at just a few of the putative 'Mosan' features which Swadesh presented which turn out to be Northwest Coast areal traits (identified above in the discussion of the Northwest Coast linguistic area): (1) 'Extensive use of suffixes.' (2) 'Nearly complete absence of functioning prefixes in Chimakuan and Wakashan, minor role in comparison to the suffixes in Salish.' (Notice that typologically it is quite common for suffixing languages to lack prefixes.) (3) 'Extensive use of stem reduplication, including initial reduplication . . . and . . . full stem reduplication.' (4) 'Aspect, including at least the dichotomy of momentaneous and durative.' (5) 'Tense is an optional category.' (6) 'Distributive plural is an optional category. This is very different from the European kind of plurality.' (7) 'Dichotomy of non-feminine versus feminine gender shown in demonstratives and articles.' (8) 'Numeral classifier notions, shown by suffixes.' (9) 'Two alternate stems for number' (lexically paired distinct singular and plural verb stems). (10) 'Lexical suffixes (sometimes called field suffixes), referring to body parts and other space references.' (11) 'Predicative use of nouns.' (12) 'Demonstrative distinctions such as the present versus absent, or visible versus invisible.' As is clear, these traits which Swadesh listed as evidence for the Mosan hypothesis of remote linguistic relationship are

better explained as the results of borrowing within the Northwest Coast linguistic area (see Campbell 1997a for details).

From this example, it is easy to see why the identification of areal traits is so important in historical linguistics. In this case, failure to recognise the areal borrowings led to an erroneous proposal of genetic relationship among neighbouring language families. (The methods for investigating distant genetic relationship are treated in detail in Chapter 13.)

Distant Genetic Relationship

De Laet [1643], speaking of Hugo Grotius' methods: If you are willing to change letters, to transpose syllables, to add and subtract, you will nowhere find anything that cannot be forced into this or that similarity; but to consider this as evidence for the origin of peoples – this is truly not proved as far as I am concerned.

(Metcalf 1974: 241)

13.1 Introduction

A topic of great current interest in historical linguistics is that of distant genetic relationships, and both the methods and the hypothesised distant family relationships have been much debated. Postulated remote relationships such as Amerind, Nostratic and Proto-World have been featured in newspapers, magazines and television documentaries, and yet these same proposals have been rejected by most mainstream historical linguistics. How is one to know what to believe? How can claims about very remote linguistic relationships be evaluated? This chapter addresses these questions by surveying the various methodological principles, criteria and rules of thumb that are considered important in proposals of distant genetic relationship. The goal is to prepare you to be able to see past the controversies by explaining the methods and their limitations. Armed with these, you should be able to evaluate proposals of remote linguistic affinity for yourself.

Two outlooks can be distinguished, or stages in research on potential distant genetic relationships, each with its own practices. The first is like a scouting expedition. In it, the intention is to call attention to a possible but as yet untested connection between languages not known to be related to one another. In this approach, a wide net is often cast in order

to haul in as much potential evidence as possible. The second outlook comes into play typically when the intention is to test a proposal that has already been made. In it, those forms considered initially as possible evidence are submitted to more careful scrutiny. Unfortunately, the more laissez-faire setting-up type hypotheses of the first approach are not always distinguished from the more cautious hypothesis-testing type of the second. Both orientations are valid. Nevertheless, long-range proposals which have not been evaluated carefully are not considered acceptable or established. As Antoine Meillet, a famous Indo-Europeanist well known for his common-sense discussions of historical linguistic methods, cautioned, excessive zeal for long-range relationships can lead to methodological excesses: 'The difficulty of the task of trying to make every language fit into a genetic classification has led certain eminent linguists to deprive the principle of such classification of its precision and its rigour or to apply it in an imprecise manner' (1948 [1914]: 78). The comparative method has always been the basic tool for establishing genetic relationships, though it is necessary to discuss a number of particular aspects of how it is applied in work on distant genetic relationships and to address approaches which have sometimes been advocated as competitors of the comparative method.

In order to give an idea of what is at issue, the following is a list of some of the better-known hypotheses which would group together languages which are not yet known to be related. None of the proposed genetic relationships in this list has been demonstrated yet, even though some are repeated frequently, for example in encyclopaedias and textbooks. Many other unconfirmed proposals of distant genetic relationship (not listed here) have also been made.

- Afroasiatic (and a smaller earlier version called Hamito-Semitic) (proposed grouping of Berber, Chadic, Cushitic, Egyptian and Semitic)
- Altaic (proposed grouping of Turkic, Tungusic, Manchu and Mongolian, to which some proposals also add Ainu, Japanese, Korean and others)
- Amerind (Joseph Greenberg's proposal which would lump all the more than 150 Native American languages families except Eskimo-Aleut and so-called Na-Dene into one large group)
- Athabaskan (or Na-Dene) plus Sino-Tibetan
- Austic (Austro-Asiatic with Austronesian)
- Austro-Tai (Japanese–Austro-Thai)
- Basque–Caucasian, Basque–Sino-Tibetan–Na-Dene
- Dravidian–Uralic
- Dravidian–Japanese

Distant Genetic Relationship

Elamite–Dravidian

Eskimo and Indo-European

Eskimo–Uralic

Eurasiatic (Greenberg's attempt to put together Indo-European, Uralic, Eskimo-Aleut, Ainu and several other otherwise unaffiliated languages)

Hokan (in various versions which group many American Indian families and isolates)

Indo-European and Afroasiatic

Indo-European and Semitic

Indo-Pacific (Greenberg's attempted grouping of all the non-Austro-nesian languages of the Pacific, including all Papuan families, Tasmanian and Andamanese)

Indo-Uralic (Indo-European, Uralic)

Japanese–Altaic

Japanese–Austronesian

Khoisan (the African families with clicks, except the Bantu languages which borrowed clicks)

Macro-Siouan (Siouan, Iroquoian, Caddoan, sometimes Yuchi)

Maya–Chipayan (Mayan, Uru-Chipayan of Bolivia)

Na-Dene (Eyak-Athabaskan, Tlinglit, Haida – the position of Haida is highly disputed)

Niger-Kordafanian (large number of African families, including the very large Bantu family)

Nilo-Saharan (large number of African families)

Nostratic (various versions; the best known groups Indo-European, Uralic, Altaic, Kartvelian, Dravidian and Afroasiatic, though some add also Chuckchi-Kamchatkan, Eskimo-Aleut, Sumerian and Gilyak (Nivkh))

Penutian (in various versions which group many American Indian families and isolates)

Proto-Australian (all twenty-six or so of the Australian families)

Proto-World (Global Etymologies)

Ural–Altaic (Uralic and so-called Altaic)

Ural–Altaic and Eskimo-Aleut

Yukagir–Uralic

Let us look now at the methods and criteria that have been used in research on distant genetic relationships. (These are treated in more detail in Campbell 1997a: 206–59 and Campbell (forthcoming a), upon which this chapter is based.)

13.2 Lexical Comparison

Throughout history, word comparisons have been employed as evidence of family relationship, but, given a small collection of likely-looking cognates, how can we determine whether they are really the residue of common origin and not the workings of pure chance or some other factor? It turns out that lexical comparisons by themselves are seldom convincing without additional support from other criteria. Because lexical comparisons have typically played the major role in hypothesised distant genetic relationships, we begin by considering the role of basic vocabulary and lexically based approaches.

13.2.1 Basic vocabulary

Most scholars insist that basic vocabulary should be part of the supporting evidence presented in favour of any distant genetic relationship. Basic vocabulary is usually not defined rigorously but is understood generally to include terms for body parts, close kinship, frequently encountered aspects of the natural world (mountain, river, cloud and the like) and low numbers. Basic vocabulary is in general resistant to borrowing, and so, similarities found in comparisons involving basic vocabulary items are unlikely to be due to diffusion and hence stand a better chance of being evidence of distant genetic relationships, of being inherited from a common ancestor, than other kinds of vocabulary. Of course, basic vocabulary can also be borrowed – though infrequently – so that its role as a safeguard against borrowing is not foolproof (see examples below).

13.2.2 Glottochronology

Glottochronology (discussed in Chapter 6), which depends on basic, relatively culture-free vocabulary, has been rejected by most linguists, since all its basic assumptions have been challenged. Therefore, it warrants little discussion here. Suffice it to repeat that it does not find or test distant genetic relationships, but rather it *assumes* that the languages compared are related and merely proceeds to attach a date based on the number of core-vocabulary words that are considered similar among the languages compared. This, then, is no method for determining whether languages are related.

Glottochronology's focus on vocabulary replacement does draw attention indirectly to a serious problem concerning lexical evidence in long-range relationships. Related languages which separated long ago

may have undergone so much vocabulary replacement that insufficient shared original vocabulary will remain for an ancient shared kinship to be detected. This constitutes a serious problem for detecting really ancient relationships.

13.2.3 Multilateral (or mass) comparison

The best-known of the approaches which rely on inspectional resemblances among lexical items is that advocated by Joseph Greenberg, called 'multilateral (or mass) comparison'. It is based on 'looking at . . . many languages across a few words' rather than 'at a few languages across many words' (Greenberg 1987: 23). The lexical similarities determined by superficial visual inspection which are shared 'across many languages' alone is taken as evidence of genetic relationship. This approach stops where others begin, at the assembling of lexical similarities. These inspectional resemblances must be investigated to determine why they are similar, whether the similarity is due to inheritance from a common ancestor (the result of a distant genetic relationship) or to borrowing, accident, onomatopoeia, sound symbolism, nursery formations and the various things which we will consider in this chapter. Since multilateral comparison does not do this, its results are controversial and rejected by most mainstream historical linguists.

In short, no technique which relies on inspectional similarities in vocabulary alone has proven adequate for establishing family relationships.

13.3 Sound Correspondences

It is important to emphasise the value and utility of sound correspondences in the investigation of linguistic relationships. Nearly all scholars consider regular sound correspondences strong evidence of genetic affinity. While sound correspondences are fundamental to most approaches to determining language families, they can be misused, and it is important to understand how this can be.

First, it is correspondences which are crucial, not mere similarities; correspondences do not necessarily involve similar sounds. The sounds which are equated in proposals of remote relationship are typically very similar, often identical, although such identities are not so frequent among the daughter languages of well-established non-controversial language families. The sound changes that lead to such non-identical correspondences often result in cognate words being so changed that their cognacy is not apparent. These true but non-obvious cognates are missed by

methods, such as multilateral comparison, which seek only inspectional resemblances. They miss such well-known true cognates as French *cinq*/Russian *p'jaj*/Armenian *hing*/English *five* (all derived by straightforward changes from original Indo-European **penk^we-* 'five'), French *bœuf*/English *cow* (from Proto-Indo-European **g^wou-*), French */nu/* (spelled *nous*) 'we, us'/English *us* (both ultimately from Proto-Indo-European **nos-*; English from Germanic **uns* < **ns*); the words in these cognate sets are not visually similar to each other, but they exhibit regular correspondences among the cognates.

There are a number of ways in which the criterion of sound correspondences can be misapplied. Sometimes regularly corresponding sounds may also be found in loans. For example, it is known from Grimm's Law that real French-English cognates should exhibit the correspondence *p* : *f*, as in *père*/father, *pied*/foot, *pour*/for (mentioned in Chapter 5). However, French and English appear to exhibit also the correspondence *p* : *p* in cases where English has borrowed from French or Latin, as in *paternel*/paternal, *piédestal*/pedestal, *per*/per. Since English has many such loans, examples illustrating this bogus *p* : *p* sound correspondence are not hard to find. In comparing languages not yet known to be related, we must use caution in interpreting sound correspondences to avoid the problem of apparent correspondences found in undetected loans. Generally, sound correspondences found in basic vocabulary warrant the confidence that the correspondences are probably legitimate, since, as mentioned above, terms for basic vocabulary are borrowed only infrequently. However, even here we have to be careful, since items of basic vocabulary can also be borrowed, though more rarely. For example, Finnish *äiti* 'mother' and *tytär* 'daughter' are borrowed from Indo-European languages; if these loans were not recognised, one would suspect a sound correspondence of *t* : *d* involving the medial consonant of *äiti* (compare Old High German *eidī*) and the initial consonant of *tytär* (compare Germanic **dohtēr*) based on these basic vocabulary items (found also in other loans).

Some non-genuine sound correspondences can also come from accidentally similar lexical items among languages. Languages share a certain amount of similar vocabulary by sheer accident. A few examples that show this are: Proto-Je **niw* 'new'/English *new*; Kaqchikel dialects *mes* 'mess, disorder, garbage'/English *mess*; Jaqaru *aska* 'ask'/English *ask*; Māori *kuri* 'dog'/English *cur*; Lake Miwok *hóllu* 'hollow'/English *hollow*; Gbaya *be* 'to be'/English *be*; Seri *ki?*/French *qui* (/ki/) 'who?'; Yana *t'inii-* 'small'/English *tiny*, *teeny*; and the famous handbook examples of Persian *bad*/English *bad*, and Malay *mata* 'eye'/Modern

Greek *mati* 'eye'. Other cases of unreal sound correspondences may turn up if one permits wide semantic latitude in proposed cognates, so that phonetically similar but semantically disparate forms are equated. For example, if we were to compare Pipil (Uto-Aztecan) and Finnish (Uralic) words such as Pipil *teki* 'to cut' : Finnish *teki* 'made', *te:n* 'mouth' : *teen* 'of the tea', *tukat* 'spider' : *tukat* 'hairs', *tila:n* 'pulled' : *tilaan* 'into the space', *tu:lin* 'cattails, reeds' : *tuulin* 'the wind's', and so on, we note a recurrence of a *t : t* correspondence. However, the phonetic correspondence in these words is due to sheer accident, since it is always possible to find phonetically similar words among languages if their meanings are ignored. With too much semantic liberty among compared forms, it is easy to come up with spurious correspondences such as the Pipil–Finnish *t : t*. Unfortunately, wide semantic latitude is frequently a problem in proposals of remote relationship. Additional non-inherited phonetic similarities crop up when onomatopoeic, sound-symbolic and nursery forms are compared. A set of proposed cognates involving a combination of loans, chance enhanced by semantic latitude, onomatopoeia and such factors may exhibit false sound correspondences. For this reason, some proposed remote relationships which purportedly are based on regular sound correspondences nevertheless fail to be convincing.

Most linguists find sound correspondences strong evidence, but many neither insist on them solely nor trust them fully. Most are happier when additional evidence from comparative morphology and grammar also supports the hypothesis.

13.4 Grammatical Evidence

Scholars throughout linguistic history have considered morphological evidence important for establishing language families. Many favour 'shared aberrancy' (talked about sometimes as 'submerged features', 'morphological peculiarities', 'arbitrary associations'), as illustrated, for example, by the corresponding irregularities in forms of the verb 'to be' in branches of Indo-European in Table 13.1 (see overleaf; Pers = person, Pl = plural, Sg = singular; OCS = Old Church Slavonic). For example, the Algonquian–Ritwan hypothesis, which groups Wiyot and Yurok (two languages of California) with the Algonquian family, was controversial, but morphological evidence such as that in the following comparison of Proto-Central Algonquian (PCA) and Wiyot helped to prove the relationship to everyone's satisfaction:

PCA **ne + *ehkw-* = **netehkw* 'my louse'

Wiyot *du + hīkw* = *dutīkw* 'my louse' (Teeter 1964: 1,029).

TABLE 13.1: Forms of the verb 'to be' in some Indo-European languages

	<i>3rd Pers Sg</i>	<i>3rd Pers Pl</i>	<i>1st Pers Sg</i>
Hittite	ests _i	asants _i	—
Sanskrit	ásti	sánti	asmi
Greek	estí	eisí	eimés
Latin	est	sunt	sum
OCS	jestr	sānti	jesm _i
Gothic	ist	sind	im

In Proto-Central Algonquian, a *-t-* is inserted between a possessive pronominal prefix and a vowel-initial root, while in Wiyot a *-t-* is inserted between possessive prefixes and a root beginning in *hV* (with the loss of the *h* in this process). There is no phonetic (or other natural) reason for why a language would add a *t* in this environment (between vowels or between a vowel and *h*), and this is so unusual that it is not likely to be shared by borrowing or by accident. Inheritance from a common ancestor which had this peculiarity is more likely, and this is confirmed by other evidence shared by these languages. Another example is the comparison of the 'formational irregularities' between English *I-me* and French *je-moi* which Morris Swadesh (1951: 8) said would suggest a genetic relationship between English and French even if no other evidence were preserved. Another often-repeated example is the agreement between English *good/better/best* and German *gut/besser/best*, said to be 'obviously of enormous probative value' for showing that languages are related (Greenberg 1987: 30).

Morphological correspondences of the 'shared aberrancy'/'submerged features' type, just like sound correspondences, are generally thought to be an important source of evidence for distant genetic relationships. Nevertheless, caution is necessary here as well. There are impressive cases of apparent idiosyncratic grammatical correspondences which in fact have non-genetic explanations. Since some languages do share some seemingly submerged features by accident, caution is necessary in the interpretation of morphological evidence. Clearly, then, the strongest hypotheses of relationship are those which have evidence of several sorts, recurrent sound correspondences in basic vocabulary and multiple examples of grammatical evidence of the sort just discussed.

13.5 Borrowing

Diffusion is a source of non-genetic similarity among languages. It can complicate evidence for remote relationships. Too often, scholars err in

not eliminating loans from consideration as possible evidence of wider relationship. An example which was presented as evidence of the controversial 'Chibchan-Paezan' genetic grouping (involving several South American language families) illustrates this problem. For the proposed cognate set meaning 'axe', forms from only four of the many languages were cited, two of which are loanwords: Cuitlatec *navaxo* 'knife', borrowed from Spanish *navajo* 'knife, razor', and Tunebo *baxi-ta* 'machete', from Spanish *machete* (in Tunebo [x] alternates with [ʃ]; nasal consonants do not occur before oral vowels; the vowels of the Tunebo form are expected substitutes for Spanish *e*) (Greenberg (1987: 108). Clearly, because two of the four pieces of evidence are borrowings, the putative 'axe' cognate is not good evidence for the hypothesis. Among compared forms cited as support for the controversial Nostratic hypothesis (which would join Indo-European, Uralic, so-called Altaic, Kartvelian, and for some scholars also Dravidian and Afroasiatic into one large superfamily; see Kaiser and Shevoroshkin 1988), some involve known loanwords (for example, those for 'practise witchcraft'), and others have been claimed to involve loans, for example those for 'vessel', 'honey', 'birch', 'bird-cherry', 'poplar', 'conifer' and so on (see Campbell forthcoming b).

Since it is not always possible to recognise loanwords without extensive research, it is frequently suggested (as mentioned above) that the problem of borrowing can be made less severe by sticking to basic vocabulary and avoiding words with cultural content. By this rule of thumb, the Nostratic forms which have been questioned as possible loans would all be set aside. While this is good practice, it must be remembered (as mentioned above and shown in Chapter 3) that even basic vocabulary can sometimes be borrowed. Finnish borrowed from its Baltic and Germanic neighbours various terms for basic kinship and body parts, for example 'mother', 'daughter', 'sister', 'tooth', 'navel', 'neck', 'thigh', 'fur' and so on. English has borrowed from French or Latin the basic vocabulary items 'stomach', 'face', 'vein', 'artery', 'intestine', 'mountain', 'navel', 'pain', 'penis', 'person', 'river', 'round', 'saliva' and 'testicle'. The problem of loans and potential loans is very serious for distant genetic relationships.

13.6 Semantic Constraints

It is dangerous to present phonetically similar forms with different meanings as potential evidence of remote genetic relationship under the assumption that semantic shifts have taken place. Of course meaning

can shift, as seen in Chapter 10 (for example, Albanian *motër* 'sister', from Indo-European 'mother'), but in hypotheses of remote relationship the assumed semantic shifts cannot be documented, and the greater the semantic latitude permitted in compared forms, the easier it is to find phonetically similar forms which have no historical connection (as in the Pipil–Finnish examples above). When semantically non-equivalent forms are compared, the possibility that chance accounts for the phonetic similarity is greatly increased. Within families where the languages are known to be related, etymologies are still not accepted unless an explicit account of any assumed semantic changes can be provided. The advice often given is to count only exact semantic equivalences. The problem of excessive semantic permissiveness is one of the most common and most serious in long-range proposals. The following are a few of the many examples from various proposals of long-range relationships, presented just for illustration's sake (only the glosses of the various forms compared are cited). Among evidence cited for Nostratic, we find 'lip/mushroom/soft outgrowth', 'grow up/become/tree/be', 'crust/rough/scab' (see Kaiser and Shevoroshkin 1988). In the proposed global etymology for 'finger, one' (in the Proto-World hypothesis, the claim that all the world's languages are demonstrably related), we find all the following: 'one/five/ten/once/only/first/single/fingernail/finger/toe/hand/palm of hand/arm/foot/paw/guy/thing/to show/to point/in hand/middle finger' (Ruhlen 1994: 322–3). In forms from the Amerind hypothesis (which proposes that most of the languages of the Americas are demonstrably related), we find semantic equations such as the following: 'excrement/night/grass', 'body/belly/heart/skin/meat/be greasy/fat/deer', 'child/copulate/son/girl/boy/tender/bear/small', 'field/devil/bad/underneath/bottom' (Greenberg 1987). It is for reasons like this that each of these proposals of more remote linguistic relationship is highly disputed.

13.7 Onomatopoeia

Onomatopoeic words imitate the real-world sound associated with the meaning of the word, such as *bow-wow* for the noise that dogs make when barking, *cockadoodledoo* for roosters' crowing, and so on. Sometimes the connection to the sounds in nature is strong enough to inhibit onomatopoeic words from undergoing otherwise regular sound changes. For example, English *peep* /pip/, from earlier *pīpen*, would have become /paip/ by regular sound change (via the Great Vowel Shift; see Chapter 2) if not for the influence of onomatopoeia (Anttila 1989: 86). Onomatopoeic forms may be similar in different languages because

they have independently approximated the sounds of nature, not because they share any common history. Examples involving onomatopoeia must be eliminated from proposals of distant genetic relationship. A way to reduce the sound-imitative factor is to omit from consideration words which cross-linguistically are often imitative in form, for example, words meaning 'blow', 'breathe', 'suck', 'laugh', 'cough', 'sneeze', 'break/cut/chop/split', 'cricket', 'crow' (and many bird names in general), 'frog/toad', 'lungs', 'baby/infant', 'beat/hit/pound', 'call/shout', 'breathe', 'choke', 'cry', 'drip/drop', 'hiccough', 'kiss', 'shoot', 'snore', 'spit' and 'whistle', among others. Unfortunately, examples of onomatopoeic words are found very frequently in proposals of distant genetic relationships.

13.8 Nursery Forms

It is generally recognised that nursery words (the 'mama-nana-papa-dada-caca' sort of words) should be avoided in considerations of potential linguistic relationships, since they typically share a high degree of cross-linguistic similarity which is not due to common ancestry. Nevertheless, examples of nursery words are frequent in evidence put forward for distant genetic relationship proposals. The forms involved are typically 'mother', 'father', 'grandmother', 'grandfather' and often 'brother', 'sister' (especially elder siblings), 'aunt' and 'uncle', and have shapes like *mama*, *nana*, *papa*, *baba*, *tata*, *dada*, where nasals are found more in terms for females, and stops for males, but not exclusively so. Jakobson explained the cross-linguistic non-genetic similarity among nursery forms which enter common adult vocabulary. In his view, the sucking activities of a child are accompanied by a nasal sound, which can be made while nursing, then the nasal sound first associated with nursing is reproduced to show a desire to eat or impatience for missing food or the absent nurse/mother. Since the mother dispenses the food, most of the infant's longings are addressed to her, and the nasal form is turned into a parental term. Then comes a transitional period when *papa* means whichever parent is present while *mama* signals a request for need-fulfilment, and eventually the nasal-mother, oral-father association becomes established (1962 [1960]: 542-3). This helps to explain frequent spontaneous symbolic, affective developments, seen when inherited *mother* in English is juxtaposed to *ma*, *mama*, *mamma*, *mammy*, *mommy*, *mom*, *mummy*, *mum*, and *father* is compared with *pa*, *papa*, *pappy*, *pop*, *poppy*, *da*, *dad*, *dada*, *daddy*. Such nursery words do not provide reliable support for distant genetic proposals.

13.9 Short Forms and Unmatched Segments

How long proposed cognates are and the number of matched sounds (segments) within them are important, since the greater the number of matching segments in a proposed cognate set, the less likely it is that accident accounts for the similarity. Monosyllabic words (composed of a single consonant and vowel) may be true cognates, but they are so short that their similarity to forms in other languages could also easily be due to chance. Likewise, if only one or two sounds of longer forms are matched (and other sounds are left unmatched), then chance remains a strong candidate for the explanation of the similarity. Such comparisons will not be persuasive; the whole word must be accounted for.

13.10 Chance Similarities

Chance (accident) is another possible explanation of similarities among compared languages, and it needs to be avoided in questions of deep family relationships. Conventional wisdom holds that 5–6 per cent of the vocabulary of any two compared languages may be accidentally similar. Also, phoneme frequency within a language plays a role in how often one should expect chance matchings involving particular sounds to come up in comparisons of words from that language with ones from other languages; for example, about 15 per cent of English basic vocabulary begins with *s*, while only about 7.5 per cent begins with *w*; thus, given the greater number of initial *s* words in English, one must expect a higher possible number of chance matchings for *s* than for *w* when English is compared with other languages. The potential for accidental matching increases dramatically when one leaves the realm of basic vocabulary, or when one increases the pool of words from which potential cognates are sought or when one permits the semantics of compared forms to vary even slightly (Ringe 1992: 5).

Cases of non-cognate words which are similar are well known, for example French *feu* 'fire' and German *Feuer* 'fire' (French *feu* < Latin *focus* 'hearth, fireplace' [-k- > -g- > -Ø-; o > ø]; German *Feuer* < Proto-Indo-European **pūr* 'fire', Proto-Germanic **fūr-i*; compare Old English *fȳr*). As is well known, these cannot be cognates, since French *f* comes from Proto-Indo-European **bh*, while German *f* comes from Proto-Indo-European **p* (by Grimm's Law). The phonetic similarity which these basic nouns share is due to the accidental convergence resulting from sound changes that they have undergone, not to inheritance from any common word in the proto-language. That originally distinct forms

in different languages can become similar due to sound changes is not surprising, since even within a single language originally distinct forms can converge, for example, English *son/sun*, *eye/I* and *lie/lie* (Proto-Germanic **ligjan* 'to lie, lay' / **leugan* 'to tell a lie').

13.11 Sound–Meaning Isomorphism

A generally accepted principle (advocated by Meillet) permits only comparisons which involve both sound and meaning together. Similarities in sound alone (for example, the presence of tonal systems in compared languages) or in meaning alone (for example, grammatical gender in the languages compared) are not reliable, since they often develop independently of genetic relationship, due to diffusion, accident and typological tendencies (see Greenberg 1963).

13.12 Only Linguistic Evidence

Another valid principle permits only linguistic information, with no non-linguistic considerations, as evidence of distant genetic relationship (Greenberg 1963). Shared cultural traits, mythology, folklore, technologies and gene pools must be eliminated from arguments for linguistic relationship. The wisdom of this principle becomes clear when we take into account the many strange proposals based on non-linguistic evidence. For example, some earlier African classifications proposed that Ari (Omotic) belongs to either Nilo-Saharan or Sudanic 'because the Ari people are Negroes', that Moru and Madi belong to Sudanic because they are located in central Africa, or that Fula is Hamitic because its speakers herd cattle, are Moslems, and are tall and Caucasoid (Fleming 1987: 207). Clearly, language affinities can be independent of cultural and biological connections.

13.13 Erroneous Morphological Analysis

Where compared words are analysed as being composed of more than one morpheme, it is necessary to show that the segmented morphemes (roots and affixes) in fact exist in the grammatical system. Unfortunately, unmotivated morphological segmentation is found very frequently in proposals of remote relationship. Often, a morpheme boundary is inserted in forms where none is justified, as for example the arbitrarily segmented Tunebo 'machete' as *baxi-ta* (a loanword from Spanish *machete*, as mentioned above, which contains no morpheme boundary but rather is a single morpheme). This false morphological segmentation makes

the form appear more similar to the other forms cited as putative cognates, Cabecar *bak* and Andaqi *boxo-(ka)* 'axe' (Greenberg 1987: 108).

Undetected morpheme divisions are also a frequent problem. An example of this, taken from the Amerind hypothesis (which attempts to unite most of the language families and isolates of the Americas in one very large genetic grouping), compares Tzotzil *ti?il* 'hole' with Lake Miwok *talok^h* 'hole', Atakapa *tol* 'anus', Totonac *tan* 'buttocks' and Takelma *telkan* 'buttocks' (Greenberg 1987: 152); however, the Tzotzil form is *ti?-il*, from *ti?* 'mouth' + *-il* 'indefinite possessive suffix', meaning 'edge, border, outskirts, lips, mouth', but not 'hole'. The appropriate comparison *ti?* bears no particular resemblance to the other forms in this comparison set.

13.14 Non-cognates

Another problem is the frequent comparison of words which are not cognates within their own family with words from other languages as evidence of distant genetic relationship. Often, unrelated words from related languages are joined together in the belief that they might be cognates and then are compared further with forms from other language families as evidence for even more distant relationships. However, if the words are not even cognates within their own family, any further comparison with forms from languages outside the family is untrustworthy. Examples from the Maya–Chipayan hypothesis (Olson 1964, 1965) illustrate this difficulty. Tzotzil *aj(in)* 'to be born' (actually from Proto-Mayan **ar-* 'there is/are', Proto-Tzotzilan **aj-an* 'to live, to be born') is not cognate with the *ja?* (*jah*) 'pain' of the other Mayan languages listed in this set (< Proto-Mayan **jah* 'pain, hurt'), though its inclusion makes Mayan comparisons seem more like Chipaya *aj(in)* 'to hurt'. Yucatec Maya *čal(tun)* 'extended (rock)' is compared to non-cognate *č'en* 'rock, cave' in some other Mayan languages; the true Yucatec cognate is *č'e?en* 'well' (and 'cave of water') (< Proto-Mayan **k'e?n* 'rock, cave'). Yucatec *čal-tun* means 'cistern, deposit of water, porous cliff where there is water' (from *čal* 'sweat, liquid' + *tun* 'stone' compare Proto-Mayan **to:ŋ* 'stone'). The non-cognate *čaltun* suggests greater similarity to Chipaya *čara* 'rock (flat, long)' with which the set is compared than the **k'e?n* cognates do (Campbell 1973).

13.14.1 Words of limited distribution

Often in proposals of distant genetic relationship, an isolated word from some language with no known cognates in other languages of its family

is compared to forms in languages from other families. However, a word which has cognates in its own families stands a better chance of perhaps having an even more remote connection with words of languages that may be distantly related than an isolated word which has no known cognates in other languages in its family and hence offers no *prima facie* evidence of potential older age. Inspectionally resemblant lexical sets of this sort are not convincing.

13.14.2 Neglect of known history

It is not uncommon in proposals of distant genetic relationship to encounter forms from one language which exhibit similarities to forms in another language where the similarity is known to be due to recent changes in the individual history of one of the languages. In such cases, when the known history of the languages is brought back into the picture, the similarity disintegrates. An example of this sort is seen in the set of lexical comparisons labelled 'dance' in the Amerind hypothesis which compares Koasati (a Muskogean language) *bit* 'dance' with Mayan forms for 'dance' or 'sing': K'iche' *bis* (= *b'i:f* 'sing'), Huastec *bisom* and so on (Greenberg 1987: 148). However, Koasati *b* comes from Proto-Muskogean **k^w*; the Muskogean root was **k^wit-* 'to press down', where 'dance' is a semantic shift in Koasati alone, apparently first applied to stomp dances (Kimball 1992: 456). Only by neglecting the known history of Koasati (that *b* < **k^w*, and the original meaning was not 'dance') could the Koasati form be seen as similar to Mayan.

13.15 Spurious Forms

Another problem is that of non-existent 'data', that is, difficulties that have to do with the 'bookkeeping' and 'scribal' errors which result in spurious forms being compared. For example, among the forms presented as evidence for the Mayan-Mixe-Zoquean hypothesis (Brown and Witkowski 1979), Mixe-Zoquean words meaning 'shell' were compared with K'iche' *sak*, said to mean 'lobster', but which actually means 'grasshopper' – a mistranslation of the Spanish gloss *langosta* found in a K'iche'–Spanish dictionary, which in Guatemala means 'grasshopper', though it means 'lobster' in other varieties of Spanish. While a 'shell'–'lobster' comparison is a semantic stretch, it is not entirely implausible; but a comparison of 'shell'–'grasshopper' makes no sense. Errors of this sort can be very serious. Such a case is that of the words given as Quapaw in the Amerind hypothesis (Greenberg 1987) where in fact none is from

the Quapaw language, but rather all are from Biloxi and Ofo (other Siouan languages, not closely related to Quapaw; see Rankin 1992: 342). Skewed forms also often enter proposals due to philological mishandling of the sources. For example, in the Amerind evidence, the <v> and <e> of the Creek source of the data was systematically mistransliterated as *u* and *e*, although these represent /a/ and /i/ respectively. Thus <vne> 'I' is presented as *une* rather than the accurate *ani* (Kimball 1992: 448). Spurious forms skew the comparisons.

13.16 Methodological Wrap-up

Given the confusion that certain claims regarding proposed distant genetic relationships have caused, the methodological principles and procedures involved in the investigation of possible distant genetic relationships are extremely important. Principal among these are reliance on regular sound correspondences in basic vocabulary and patterned grammatical (morphological) evidence involving 'shared aberrancy' or 'submerged features', with careful attention to eliminating other possible explanations for similarities noted in compared material (for example, borrowing, onomatopoeia, accident, nursery forms and so on). Research on possible distant genetic relationships which does not heed the methodological recommendations and cautions of this chapter will probably remain inconclusive. On the other hand, investigations informed by and guided by the principles and criteria surveyed here stand a good chance of advancing understanding, by either further supporting or denying proposed family connections.

Philology: The Role of Written Records

Philologists, who chase
A panting syllable through time and space
Start it at home, and hunt it in the dark,
To Gaul, to Greece, and into Noah's Ark.

(William Cowper [1731–1800], *Retirement*, 691)

14.1 Introduction

Philology has to do primarily with the use of written attestations of earlier stages of languages, and with how the information from written forms of a language can be used to determine aspects of that language's history. The investigation of written records has always been important in historical linguistics. This chapter deals with philology and the methods for extracting historical linguistic information from written sources.

14.2 Philology

Philology is understood in different ways. Sometimes philology is taken to be merely the study of some classical or older language – in this sense, we see university departments and professional journals dedicated to Classical philology, English philology, Germanic philology, Nordic philology, Romance philology and so on. Sometimes philology is understood to mean historical linguistics as practised in the nineteenth century, since what is today called historical linguistics was often referred to earlier as 'philology', as in 'Indo-European philology'. In another sense

of the word, philology is understood as the scholarly activity which attempts to get systematic information about a language from written records. One aim of philology in this sense is to get historical information from documents in order to learn about the culture and history of the people behind the text; another aim is to examine and interpret older written attestations with the goal of obtaining information about the history of the language (or languages) in which the documents are written. This aim is the most common in historical linguistics today, and it is in this sense that the term *philology* is used in this book.

In the use of philology for historical linguistic purposes, we are concerned with what linguistic information can be got from written documents, with how we can get it, and with what we can make of the information once we have it. The philological investigation of older written attestations can contribute in several ways, for example, by documenting sound changes, distinguishing inherited from borrowed material, dating changes and borrowings, and helping to understand the development and change in writing systems and orthographic conventions. Results of these studies can have implications for claims about scribal practice, subgrouping classification, causes of changes, the reconstruction of a proto-language, borrowed changes and rules, the identification of extinct languages, and for the historical interpretation of many changes within the languages investigated in this way.

14.3 Examples of What Philology Can Contribute

The following examples illustrate some of the kinds of information that can be retrieved through philological investigations and the implications which it can have for historical linguistic understanding of the languages involved. Since examples of this sort abound for Indo-European and ancient Near Eastern languages, to show the general applicability of philological notions, the cases selected for illustration here are taken from the rich written attestations in various Mayan languages since the 1500s and from Mayan hieroglyphic writing. This makes the exercise more interesting, since it is often believed, erroneously, that Native American languages lack old written sources and that therefore little can be gained from philological investigation of them.

14.3.1 First example

Proto-Mayan contrasted **x* (velar fricative) and **h* (glottal fricative), as several of the thirty-one Mayan languages still do; however, in Yucatec

Maya these both merged to *h* (**x*, **h* > *h*). Nevertheless, colonial sources show that the contrast survived until after European contact. For example, in the Motul Dictionary from c. 1590, the two sounds were distinguished as 'loud H' (< **x*) and 'simple H' (< **h*); some example dictionary entries which illustrate the contrast are seen in Table 14.1.

TABLE 14.1: Contrastive *h* and *x* in Classical Yucatec Maya

<i>under 'simple H' ([h])</i>	<i>under 'loud H' ([x])</i>
halab- [<i>halaβ-</i>] 'thing said or sent'	halab- [Proto-Mayan <i>*xal</i>] 'weaving stick'
hel- [Proto-Mayan <i>*hil</i>] 'rest'	hel [Proto-Mayan <i>*xel</i>] 'succeed, exchange'
haa [Proto-Mayan <i>*haʔ</i>] 'water'	haa [<i>xaʔ</i>] 'to scrape, file'

This example shows that through philological investigation we can sometimes recover information about sound changes in the language under investigation, in this case about a merger in Yucatec Maya, and information about the relative date when the change took place; in this case the merger of *x*, *h* > *h* was sometime after the Motul Dictionary was written in c. 1590. (The orthography of this and following examples is based on that of Spanish at the time that the documents were written.)

14.3.2 Second example

Huastec, another Mayan language, has contrastive *k^w* (labialised velar stop) and *k^{w'}* (glottalised labialised velar stop), though no other Mayan language has these sounds. Based on the correspondence sets of Huastec *k^w* : others *k*, and Huastec *k^{w'}* : others *k'*, some had thought that Proto-Mayan must be reconstructed with **k^w* and **k^{w'}*. However, written attestations from the eighteenth century show that the labialised velars in Huastec are the results of a recent change. In words which originally had a velar stop (*k* or *k'*) followed by a back rounded vowel (*u* or *o*) followed by a glide (*w*, *j*, *h* or *ʔ*) followed by a vowel, the velars were labialised and the rounded vowel together with the glide was lost:

$$\left\{ \begin{matrix} k \\ k' \end{matrix} \right\} \left\{ \begin{matrix} u \\ o \end{matrix} \right\} \left\{ \begin{matrix} w \\ j \\ h \\ ʔ \end{matrix} \right\} V > \left\{ \begin{matrix} k^w \\ k^{w'} \end{matrix} \right\} V$$

Some examples are seen in Table 14.2. The notation <...> is used to enclose written attestations, to symbolise that the material is presented precisely as found in the source.

TABLE 14.2: The origin of Huastec labialised velars

<i>Colonial Huastec</i>	<i>Modern Huastec</i>
<cuyx> [kuwi(:)ʃ] ‘vulture’	k ^w i:ʃ ‘vulture’
<coyen> [koyen] ‘mass’	k ^w en ‘piled together’
<cohuych> [kowi(:)č] ‘tamale’	k ^w i:č ‘tamale’

This philological evidence shows that Huastec *k^w* and *k^w’* are the results of a later sound change and therefore do not belong in separate correspondence sets which would require reconstructing these sounds to Proto-Mayan. This case shows how philological information can be relevant both to the reconstruction of proto-languages and to determining the source of certain sounds and what sound changes brought them about. It also reveals something about when the change took place, in this case some time after these eighteenth-century sources were written.

14.3.3 Third example

Poqomam, Poqomchi’ and Q’eqchi’, three neighbouring Mayan languages, have all undergone the sound change **ts > s*. Some scholars had thought that this shared innovation (see Chapter 6) was evidence that the three should be grouped together in a subgroup of languages more closely related to one another than to other languages of the family. Other evidence, however, shows that while Poqomam and Poqomchi’ are very closely related, Q’eqchi’ is considerably more distant. Philological evidence shows that the change **ts > s* is not in fact a shared innovation reflecting a change in some immediate ancestor of the three languages at a time before they split up. Rather, the earliest written attestations in these languages reveal that the change was under way but not completed after European contact and that the change diffused later through these three languages. For example, the Zúñiga Poqomchi’ dictionary (from c. 1608) has entries such as *vatz* [w-ats], *vaz* [w-as] ‘elder brother’ (modern Poqomchi’ *w-as* ‘my older brother’, Proto-Mayan **ats* ‘elder brother’), *azeh* [as-ex], *atzeh* [ats-ex] ‘to treat as a brother, to take an older brother’ – ‘some say it with *tz* atzeh, and others with only *z*, *azeh*; say it as you please. Most say *azeh*, with *z*, and some with *tz*.’ Some other examples are:

tzeel, zeel	'laugh' (Proto-Mayan * <i>tseʔl</i>)
tzab, zab	'addition, balancing weight'
tzinuh, zinuh	'oak'
tzub, zub	'the profit from what is sold'.

The Morán Poqomam dictionary (c. 1720) has examples such as:

azvez, atzvez	'elder brother' (Proto-Mayan * <i>ats</i> , modern Poqomam <i>as-wes</i>)
ah zeel, ah tzeel	'laughter' (Proto-Mayan * <i>tseʔl</i>)
alaz, alatz	'descendants'
ah itz	'witch, sorcerer' (modern Poqomam <i>ax is</i> , Proto-Mayan * <i>its</i> 'evil').

Other sources show that this change was complete in Poqomchi' and Poqomam shortly after these were written, but that it diffused to Q'eqchi' only later. For example, the Morales Q'eqchi' grammar (1741) shows most forms with <tz> ([ts]):

zum	'companion' (modern Q'eqchi' <i>sum</i>)
tzuc	'gnat' (modern Q'eqchi' <i>suq</i>)
tizmaj	'bow, arrow' (modern Q'eqchi' <i>simax</i>).

Only a very few of the words cited then show the beginnings of the change, for example:

tzununk, sununk 'smell' (modern Q'eqchi' *sunu:nk*)

The philological evidence in this example shows that the change **ts* > *s* in these three languages took place after European contact and spread later among these already independent languages. This means that this change is not support for subgrouping these languages together as more closely related. This case shows how philological evidence can be relevant for subgrouping, as well as for determining the date when changes took place.

14.3.4 Fourth example

Philological information which can be derived from Mayan hieroglyphic writing helps to identify the language in which the older hieroglyphic texts (c. AD 250–900) were written as Cholan, and that it had already undergone such distinctive Cholan sound changes as **k* > *č*. For example, some Mayan glyphic signs represent rebuses (depictions of one thing to represent another thing that sounds like it, such as a picture of

an 'eye' to represent 'I' in English). A depiction of a small snake was used rebus-style in Classical Maya glyphic texts to represent 'from' (as in expressions of time, 'it was so much time since/from . . .'). This symbol was used because in Cholan 'snake' is *čan*, while 'from' is *čaʔan* – and it is hard to draw a picture of 'from'. This shows that the language of the writing system must be identified as Cholan, since among the Mayan languages only Cholan has *čaʔan* 'from', and because in Cholan *čan* 'snake' and *čaʔan* 'from' are similar enough to provide the basis for a rebus. This would not be the case in some languages of the family. For example, in Yucatec Maya, whose speakers acquired knowledge of the hieroglyphic writing much later, 'snake' is *kà:n*, reflecting Proto-Mayan **ka:n* 'snake'. Since the rebus works only with identical initial consonants, a form with *k*, as in Yucatec, could not have provided the basis for a rebus to signal a word which began with *č*, whereas Cholan *čan* 'snake' with *č* could stand in for *čaʔan* 'from', because of the **k > č* change in Cholan (**ka:n > čan* 'snake'). This helps to identify the language as Cholan, but furthermore shows that the change **k > č* had to have taken place already by the time the hieroglyphic texts were written (where the dates when the texts were written are clearly established by Mayan calendric dates in these texts).

Another example involves the hieroglyphic spelling of the name of *Chac* the 'rain god', which in Cholan is *čahk*, from Proto-Mayan **kah(o)q* 'thunder, rainstorm'. Some Mayan glyphic signs were syllabic, representing CV (consonant + vowel); Mayan monosyllabic roots of CVC shape could be spelled with two CV signs, where the vowel of the second was 'silent'. *Chac* was spelled with the syllabic signs /ča/ + /ki/. Since the /ča/ sign never substituted for /ka/ – for example, was never used to spell the Yucatec cognate *kawak* 'a calendric day name' (where both Cholan *čahk* and Yucatec *kawak* are from Proto-Mayan **kah(o)q* 'storm, thunder') – the sound change of **k* to *č* had already taken place before this name came to be written with these syllabic signs, the change found in Cholan.

These brief examples from Mayan hieroglyphic writing show how the philological investigation of these written records contributes by showing which language the hieroglyphic script was written in, and that the change **k > č* took place at a time before the texts were written. (For other examples from Mayan hieroglyphic writing, see Campbell 1984 and Justeson et al. 1985.)

The examples cited in this section show that findings from philological investigation can have implications for, among other things, (1) documenting former contrasts now lost and sound changes that have taken place, (2) refining and clarifying the reconstructions of proto-phonology,

(3) distinguishing borrowed changes from legitimate shared innovations and clarifying evidence for subgrouping, (4) identifying ancient, sometimes extinct, languages, and deciphering writing systems, and (5) establishing the relative age of changes. In effect, if the right kind of information is preserved in the written sources, philology can contribute insight and understanding to most areas of linguistic change.

14.4 The Role of Writing

The relationship of writing (of early written traditions) to the comparative method is sometimes misrepresented but needs to be understood. As Mary Haas pointed out,

Since the existence of written languages . . . was of great strategic importance in the development of our knowledge of Indo-European, some scholars came to believe that the historical and comparative study of languages was impossible without written records of earlier stages of the same or related languages. (1969a: 20)

This belief persisted in spite of the fact that the comparative study of unwritten, so-called ‘exotic’ languages has had a long and successful history. Leonard Bloomfield resolved to disprove once and for all the assertion that a proto-language could not be reconstructed successfully in the absence of written records from earlier stages of the language. Bloomfield’s (1925, 1928) famous proof of the applicability of the comparative method in unwritten languages (presented in Chapter 5) was based on the assumption that sound change is regular so that different sound correspondence sets among Algonquian languages could not be explained away and thus required different proto-sounds to be reconstructed. His decision to reconstruct **çk* for one sound correspondence set, even though it contained sounds found in other correspondence sets but corresponding to different sounds in the different daughter languages, was confirmed by the discovery of Swampy Cree which contained distinct sounds as the reflexes in each of the sound correspondences (see Chapter 5 for details). Bloomfield’s proof of the applicability of the comparative method to unwritten languages is seen as a major contribution to historical linguistics. It means that while we are happy to have the testimony of written records for earlier periods when we can get it, it is by no means necessary to comparative reconstruction. Moreover, it must be recalled that written records have to be interpreted – one of the things done in philology – and they are only as valuable and reliable as our ability to determine the phonetic and phonemic system underlying them.

Hittite illustrates this point. While Hittite has radically revised our understanding of Indo-European phonology, it was written in a highly imprecise cuneiform syllabary on clay tablets from 1650 to 1200 BC, and several aspects of its phonetic interpretation are still in dispute. For example, did Hittite have four or five vowels? Did it have an [o]? Did Hittite have contrastive vowel length, or what does the doubling of vowels in the texts mean? What do the frequent double stops in the orthography represent? Clearly, then, Hittite writing provides much useful information, but it also has limitations for the historical interpretation of the language.

In part, the prejudice in favour of old written traditions is a hold-over from a pre-Neogrammarian stage of comparative linguistics when language change was thought to take place in discrete stages of first progress and then decay. The languages of so-called 'savage' people were thought to be 'primitive' relics which had not yet evolved (progressed, through processes of compounding and amalgamation) to the state of greater perfection which in this view older written Indo-European languages, in particular Sanskrit, had attained; modern languages were typically viewed as just decayed reflections (due to analogy and sound changes, which were assumed to be operative only in this later phase) of their more perfect ancestors. Thus, the old written languages, thought to be more perfect, were allotted a special status. In the Neogrammarian movement, comparative linguistics adopted the position that language change did not take place in discrete stages of either progress or decay, but rather languages undergo the same kinds of changes (sound change and analogy) at all times throughout their histories. With this reorientation, written language was accorded less of a special status and attention turned more towards spoken language, in particular to dialects, and attention to dialectology promoted the development of phonetics, techniques for recording forms of spoken language (see Chapter 7). Thus, speaking of the principle that sound laws are without exception, Berthold Delbrück affirmed in his influential Neogrammarian introduction to linguistics:

This natural constitution of language is not manifested in the cultivated tongues, but in the dialects of the people. The guiding principles for linguistic research should accordingly be deduced not from obsolete written languages of antiquity, but chiefly from the living popular dialects of the present day. (1882 [1880]: 61)

In short, the existence of an old written tradition with older texts is by no means necessary for the comparative method to be applicable, and in any case, the written records for historical linguistic interests are only as

valuable as our ability to interpret them and to determine accurately the phonetic and structural properties of the language which they represent.

14.5 Getting Historical Linguistic Information for Written Sources

The techniques employed and the sorts of information which one can expect to obtain from written records vary greatly from case to case, depending on the circumstances. For example, how we investigate texts written in a logographic writing system (where signs represent whole words) will differ markedly from how we treat syllabaries (with symbols based on syllables, usually representing consonant + vowel) or alphabetic scripts. However, in general, philology will use anything which provides information helpful for interpreting the phonetic, phonemic and grammatical contents of the language which the written records represent so that this information can be put to use in unravelling further the history of the language involved.

Very often, what information we can derive for interpreting the structure of the language at the time when the texts were written and extrapolating from that for the understanding of the history of the language is a matter of luck, of what happens to show up in the sources available. In the best cases, we may have descriptions or commentaries about the pronunciation at the time, and these can be immensely helpful. In most situations, however, we are not so fortunate as to have worthwhile, readily interpretable phonetic descriptions from the past. Other valuable sources of phonetic information include rhymes, metre, occasional spellings, transliterations of forms from other languages whose phonology is better known, aid from translations from texts known in other languages, and clues from related languages and dialects. Let us consider some of these briefly.

14.5.1 Rhymes and the testimony of poetry

For example, the word 'night' was spelled variously <niht>, <ny3t>, <nyght> and <nicht> in Middle English texts (see also Scots English <nicht> /nixt/). For various reasons, it is assumed that the consonant before the final *t* represented in these various spellings (especially by <gh> and <3>) of the word for 'night' and others like it was /x/, a voiceless velar fricative, even though the sound is gone from Modern English /nait/ 'night'. Some of the evidence for it representing /x/ in Middle English comes from the fact that in Middle English poetic texts, words with <gh> and <3>, with the postulated /x/, rhyme only with

other words spelled in this way and never with words which contain the same vowel but lack a spelling of the /x/. For example, Chaucer rhymes *knight* with *wight* 'strong' but not with *white*. (Lass 1992: 30).

14.5.2 Occasional spellings

An indirect source of knowledge about changing pronunciation is the variant spellings which sometime provide clues concerning what was changing and when the change took place. In the history of English, in the 1600s spelling conventions were starting to regularise, as printers increasingly used uniform spelling, but standard spelling was far from fixed. Occasional spellings (not the more expected ones) from the period show change in pronunciation. For example, variants such as *ceme/come*, *credyll/cradel* 'cradle' and *teke/take* show that former /a/ had changed to something closer to modern /e(i)/. Examples such as *symed/semmed* 'seemed' and *stypylle/stepel* 'steeple' reflect the /e:/ > /i:/ of the Great Vowel Shift. Spellings of *marcy/mercy* 'mercy', *sarten/certain* 'certain', *parson/persoun* 'person', and so on, show that /er/ changed to /ar/ in the pronunciation of the writer of these forms. (This change was fairly general, though sociolinguistically conditioned, and it was ultimately reversed, but left such doublets in English as *clerk/clark*, *person/parson*, *vermin/varmint* and *university/varsity*.)

14.5.3 Interpretation from material from foreign languages

For example, the principal source of information on Gothic is Bishop Wulfila's (AD 311–82) translation of the Bible, part of which has survived, whose orthography was based on that of Greek at the time when Wulfila wrote. The spellings with <ai> and <au> are interpreted as representing /ē/ and /ō/ respectively, based on the value of <ai> and <au> in Greek spelling at the time. This interpretation is supported by the Gothic spellings of foreign names and words known to have had *e*(:) and *o*(:) in the source languages, for example: *Aīlisabaīp* 'Elizabeth', *Nazaraīp* 'Nazareth', *prau̅fetus* 'prophet', *Gaúmaúrra* 'Gomorrhah', *Naúbaímbaír* 'November'. This gives greater confidence in the interpretation of the phonetic value of Gothic <ai> and <au> (Krause 1968: 67).

14.5.4 Clues from related languages

In the case of texts in languages which are less well known, sometimes clues to the interpretation of the writing can be obtained from related

languages. For example, in the case of Middle English <gh>/<3> (above), although 'night' in Modern English has no /x/, we can be relatively more assured of our /x/ interpretation of the phonetic value based on the fact that English's closest relatives have /x/ in cognate words, as in German *Nacht* [naxt] 'night' and similar forms in Dutch and Frisian (Lass 1992: 30).

An example which shows how both translated texts and clues from related languages can help comes from Chicomuceltec, an extinct Mayan language, reasonably closely related to Huastec. Very little is known directly about Chicomuceltec, just very limited word lists (no more than 500 words) and one text from before it became extinct. The text is a *Confesionario* from 1775 with about ten lines in Chicomuceltec corresponding to the adjacent Spanish text. The orthography is based on Spanish, and by referring to the translated Spanish text for possible meanings and to corresponding Huastec forms, it is possible to work out much of the contents of the text, as seen in the following example line:

Chicomuceltec:	ixcataton tan Domingo?
Spanish:	Has trabajado los Domingos?

The Spanish line means 'have you worked on Sundays?' and leads us to believe that the Chicomuceltec version has the same meaning. In the Spanish orthography at the time, <x> represented [ʃ] (Spanish /ʃ/ changed to a velar fricative [x] in the early 1700s and is spelled today primarily with <j>). In comparing Huastec material, we postulate for Chicomuceltec that *ixca-* [iʃka-] is 'you past' (containing within it *-a-* 'you singular') + *t'ohn-* 'work', *tan* 'in' and the Spanish loanword *Domingo* 'Sunday'. Without access to related Huastec forms and corresponding translation of the same text in Spanish, we would have no basis for segmenting the morphemes or guessing what this line means. Without reference to Huastec forms, we would not be able to recover the word 'to work' or to postulate that it contained a glottalised *t'* as in the Huastec cognate, since the glottalised stops are not distinguished from plain ones in the Spanish-based orthography of the Chicomuceltec text. Together, the corresponding translation in a better-known language (Spanish in this case) and comparison with closely related languages (Huastec) provide for a fairly successful philological interpretation of this text in an otherwise very poorly known language (Campbell 1988: 202–7).

There are also many potential pitfalls and sources of error in attempts to interpret older written sources, and it is important to keep in mind the many ways in which well-meaning interpretations can go astray.

Sometimes the writing system just under-represents the contrasts that existed in the language at the time it was written, and so information is simply not available for a full interpretation. In the Chicomuceltec example, this is illustrated by the lack of distinction in the Spanish-based orthography between /t/ and /t'/ in the language. In early attestations of other Native American languages, contrastive tones, glottal stops and long vowels, for example, are simply not represented at all in the documents. Other problems can come from the difficulty of interpreting variations in the writing, from cases where different dialects with different features are represented, and from the tendency for writing systems to preserve representations of features which have been lost in the spoken language long after the language has changed (witness the <gh> in Modern English *night*). The needs of poetic form (especially metre) may distort the written language, for example under poetic licence using word orders not normally found in the spoken language. Old texts which are translations of other texts, such as the Bible in Gothic based on Greek, or in English based on translations from Latin versions, often lead to grammatical distortions, loan translations or calques, and so on which were not actually part of the language.

In summary, in many cases, exercising appropriate caution, we can obtain much information from older written attestations of value to the historical interpretation of languages. This is an important source of historical linguistic information, useful in the arsenal of tools which the historical linguist uses to recover the history of languages.

Linguistic Prehistory

Some . . . point to the possible linguistic similarity between Kerberos, the guardian dog of the Greek Hades, and the epithet *sabala* 'spotted, varicoloured' (**k'erbero*?), the standard epithet of one of the dogs of Yama, the Indic god of the dead . . . all one gains by postulating such a correspondence is the somewhat incongruous image of a Proto-Indo-European canine guard of the realm of the dead who answered to the name of 'Spot!'

(Mallory 1989: 129)

15.1 Introduction

Linguistic prehistory has been associated with a number of names in the literature: linguistic palaeontology, linguistic archaeology, applied historical linguistics and so on. It has a long (and sometimes chequered) history, though in recent years it has again come into focus. Broadly speaking, linguistic prehistory uses historical linguistic findings for cultural and historical inferences. Linguistic prehistory correlates information from historical linguistics with information from archaeology, ethnohistory, history, ethnographic analogy, human biology and other sources of information on a people's past in order to obtain a clearer, more complete picture of the past. Thus, the comparative method, linguistic homeland and migration theory, cultural inventories from reconstructed vocabularies of proto-languages, loanwords, place names, classification of languages, internal reconstruction, dialect distributions and the like can all provide valuable historical information useful to linguistic prehistory. How these methods can contribute to a fuller picture of prehistory is the focus of this chapter. What linguistic prehistory is all about is illustrated by a few well-known and informative cases. At the same time, it is also

important to be aware of the limitations of historical linguistics and of the possible pitfalls and problems which can be encountered by attempts to correlate historical linguistic information with the findings in other fields. This is the subject of the last section of this chapter.

15.2 Indo-European Linguistic Prehistory

To get started, it is helpful to look briefly at some of the findings and claims about the prehistory of Indo-European-speaking peoples as reflected in linguistic evidence. This is an instructive case study.

By the mid-1800s, comparative Indo-European linguistics had advanced sufficiently that it was possible to say how the Indo-European languages had diversified and to make reasonably informed hypotheses about the material culture and social structure of the Proto-Indo-Europeans (the speakers of Proto-Indo-European) and about their homeland – all based solely on linguistic findings and interpretations (see Schrader 1890). However, crucial archaeological and other information was not yet available at that time, and the first archaeological data that did become available seemed to clash with the most probable linguistic interpretations. For example, according to an early hypothesis based on linguistic evidence, the Indo-European homeland (the place where Proto-Indo-European was originally spoken, from where Indo-European languages diversified and spread out, ultimately to their current locations) was located in the steppes to the north of the Black Sea; however, it was objected that no likely archaeological culture was known from this area at that time. In fact, supportive archaeological evidence did not appear until some 100 years later, with Marija Gimbutas' (1963) work on the Kurgan culture of the Pontic and Volga steppes. The correlation between Proto-Indo-European and the Kurgan archaeological culture now has much support, though there is also still debate (see Mallory 1989). In Gimbutas' view, the expansion of Kurgan culture corresponds in time and area with the expansion of Indo-European languages outwards from this homeland, and correlates with the arrival in these areas of such typically Indo-European things as horses, wheeled vehicles, double-headed axes, small villages, pastoral economy and patriarchal society.

Reconstruction by the comparative method has provided a fairly clear view of important aspects of Proto-Indo-European culture, including valuable information on the original homeland, social structure, kinship, subsistence, economy, law, religion, environment, technology and ideology. As Calvert Watkins observed,

When we have reconstructed a proto language, we have also necessarily established the existence of a prehistoric society . . . the contents

of the Indo-European lexicon provide a remarkably clear view of the whole culture of an otherwise unknown prehistoric society . . . Archaeology, archaeological evidence, is limited to material artifacts alone. The reconstruction of vocabulary can offer a fuller, more interesting view of a prehistoric people than archeology precisely because it includes nonmaterial culture. (1969: 1,498)

Aspects of Proto-Indo-European's cultural inventory that can be recovered from the reconstructed vocabulary of Proto-Indo-European include the following.

15.2.1 Social structure and people

Proto-Indo-European society was *patriarchal*, *patrilineal* (descent through males) and *patrilocal* (bride went to live with husband's family). It was *stratified*: three levels of social stratification have been identified, namely a tribal king, nobles or warriors, and peasants and farmers.

**demə-* 'house, household' (Greek *despotēs* 'master, lord < **dems-pot-* 'house-master' (*-*pot-* 'powerful'), Latin *dominus* 'master of a household' < **dom-o-no*);

**dā-mo* 'division of society, community division by location' (Greek *dēmos* 'people, land'; the source of English *democracy*);

**sel* 'settlement';

**pelə-* 'fortified high place', 'citadel' (Greek *polis* 'city', Sanskrit *pūr*);

**dhūno-* 'fortified, enclosed place' (Celtic **dūn-o-* 'hill, stronghold', borrowed into Germanic as **tūnaz* 'fortified place', source of English *town*);

**bhergh* 'high, hill, hill-forts' (seen in English *burg*) (perhaps not Indo-European in origin);

**teutā-* 'tribe' (Germanic **θeudā-* 'people', seen in the English words *Teuton*, *Dutch*, and in German *Deutsch* 'German');

**rēg-* 'tribal king' (see Norwegian *rik* 'realm', Latin *rēx* (from *rēg-s*, 'king (royal and priestly title)'), Sanskrit **rājā*, *rājan* 'king, rajah'; these words are related to **reg-* 'to move in a straight line');

**wī-ro-* 'man, free man';

**ghos-ti* 'guest, host, stranger', 'one with mutual obligations of hospitality' (compare Latin *hostis* 'enemy' < 'stranger').

15.2.2 Economy

**k(a)mb-yo-* 'to exchange, to turn', derived from **skamb*, **kamb* 'to curve, bend' (compare Latin *cambiāre* 'to exchange', seen in Spanish *cambio* 'change'; English *change* is borrowed from French);

- **dap-* 'to apportion (in exchange)'; suffixed **dap-no-* is reflected in Latin *damnum* 'damage entailing liability (for reparation), harm' (seen in *damn*, a loanword into English);
- **wes-* 'to buy'; in suffixed form **wes-no-*, in Latin *vēnum* 'sale' (see loans in English *vend*, *vendor*);
- (see also **peku-* 'wealth, livestock', below).

15.2.3 Agriculture

- **grə-no-* 'grain' (see English *corn*, *kernel*);
- **jewo-* 'grain';
- **pūro-* 'grain';
- **wrughjo-* 'rye';
- **bhares*, **bhars-* 'barley';
- **al-* 'to grind';
- **melə-*, **mel* 'to grind, crush' (seen in English *mill*, *meal*);
- **sē-* 'to sow' (the suffixed form **sē-ti-* is reflected in Germanic **sēdiz* 'seed') (see English *sow*, *seed*);
- **arə-* 'to plough', **arə-trom-* 'plough' (compare the loanword *arable* in English);
- **prk-* 'furrow, trench' (seen in English *furrow*), derived from **perk-* 'to dig out, tear out';
- **solk-o-* seen in Latin *sulcus* 'furrow, groove' (derived from **selk-* 'to draw, pull');
- **wog^{wh}-ini-* 'ploughshare, wedge';
- **jug-o-* 'yoke' (derived from **jeug-* 'to join');
- **serp-* 'sickle, hook';
- **kerp-* 'to harvest, gather, pluck';
- **g^{wer}erə-nā-* 'millstone, quern' (derived from **g^{wer}erə-* 'heavy') (see English *quern*);
- **agro-* 'field, fallow land on which cattle were driven' (from **ag-* 'to drive') (see English *acre*).

15.2.4 Domestic animals

- **g^{wou}-* 'bull, ox, cow' (English *cow*);
- **owi-* 'sheep' (see English *ewe*);
- **ag^{wh}-no-* 'lamb';
- **aig-* 'goat' (see English *aegis*);
- **ghaido-* 'goat' (English *goat*);
- **sū-* 'pig' (in suffixed form **suə-ino* 'swine') (see English *sow*, *swine*);

- *porko-* ‘young pig’ (see English *farrow*);
- *k^won-* ‘dog’ (see English *hound*);
- *ekwo-* ‘horse’ (Greek *hippos*, Latin *equus*, seen in Spanish *yegua* ‘mare’; see the loans in English *equine*, *equestrian*) (the expansion and migration of Indo-Europeans in the later third and early second millennia BC is bound up with the horse);
- *uk^ws-en-* ‘bull, ox’ (English *ox*);
- *peku-* ‘wealth, moveable property, livestock’ (see German *Vieh* ‘cattle’; see English *fee*, *fief*); suffixed **peku-n-* gives Latin *pecūnia* ‘property, wealth’ (see the borrowing in English *pecuniary*).

15.2.5 Transport

- *wegh-* ‘to go, transport in a vehicle’ (see English *way*);
- *wogh-no-* ‘vehicle (wagon)’ (derived from **wegh-* ‘to go, transport in a vehicle’) (English *wagon*, *wain*);
- *k^w(e)k^wl-o-* ‘circle, wheel’ (derived from **k^wel-* ‘to revolve, move around’) (see English *wheel*);
- *aks-lo-* ‘axle’ (see **aks-* ‘axis’);
- *nāu-* ‘boat’ (Latin *nāvis* ‘ship’; see English loans *navy*, *navigate*);
- *erǝ-*, **rē-* ‘to row’ (Germanic **rō-*, English *row*).

15.2.6 Technology (tools, implements, metals, weapons, musical instruments)

- *ajes-* ‘copper or bronze’ (see English *ore*);
- *ghel-* ‘yellow metal, to shine’ (the suffixed form **ghl-to-* ‘gold’ is seen in Germanic, as in English *gold*);
- *arg-* ‘silver, white metal, to shine’ (Latin *argentum* ‘silver’, seen in French *argent* ‘silver, money’);
- *dheigh-* ‘to form, build, mould, shape’ (see English *dough*);
- *arku-* ‘bow and arrow’ (uncertain whether it meant ‘bow’ or ‘arrow’; perhaps used as a unit; compare Latin *arcus* ‘bow’, Germanic **arhwō*, English *arrow*);
- *krut-* ‘musical instrument’.

15.2.7 Household and food terms

- *auk^w-* ‘cooking pot’ (Latin *aulla* ‘cooking pot’ is from the suffixed form **auk^w-slā-*, the source of Spanish *olla* ‘pot, jug’; with a different suffix we see Germanic **uh^w-na-* ‘oven’, the source of English *oven*);

- **bhə-g-* 'to bake' (derived from **bhē-* 'to warm') (English *bake*);
- **sal-*, **sald-o-* 'salt' (English *salt*);
- **melit-* 'honey' (French *miel*, Spanish *miel* 'honey');
- **medhu-* 'honey, mead' (English *mead*);
- **g^werə-nā-* 'quern, millstone' (already mentioned above).

15.2.8 Clothing and textiles

- **wes-* 'to clothe' (Latin *vestis* 'garment' is from **wes-ti-*, the source of French *vêtir* and Spanish *vestir*, both 'to dress, to clothe') (English *wear*);
- **jōs-* 'to gird (to belt, wear a girdle)';
- **teks-* 'fabricate' (especially with an axe), 'to weave' (textile);
- **snē-*, *nē-* 'to spin, sew'; the suffixed form *nē-tlā-* gives 'needle' (see German *nähen* 'to sew'; English *needle*);
- **webh-* 'to weave' (English *weft*, *web*);
- **sjū-* 'to sew, bind' (English *sew*);
- **w_lə-nā-*, **welə-* 'wool' (probably derived from **wel-* 'to tear, pull').

15.2.9 Religion

- **deiw-os* 'god', **dyeu-pāter* 'chief god' (Jupiter, Zeus) (related to **deiw-* 'to shine', with derivatives 'sky, heaven, god');
- **kred-dhə-* 'to place trust, believe' (religious term, based on **kerd-* 'heart' + *dhē-* 'to do, place') (see English *credence*, *credo*);
- **weg^wh-* 'to preach, speak solemnly' (as in the English loans *vow*, *devote*);
- **seng^wh-* 'prophecy', 'to sing, make incantations' (English *sing*);
- **gwerə-* 'to praise aloud' (see Latin and French loanwords in English *grace*, *grateful*, *agree*, and also in the borrowing from Celtic *bard*);
- **tyeg^w-* 'to retreat with awe';
- **g^whedh-* 'to pray, ask' (see English *bid*, *bead*);
- **ghow-ē-* 'to honour, worship, revere' (English *gawk*);
- **kailo-* 'holy, whole' (see English *holy*, *hallow*);
- **meldh-* 'to pray, speak words to a deity' (source of English *meld*);
- **prek-* 'to ask, entreat, pray' (English *pray*);
- **sak-* 'to sanctify', **sak-ro-* 'holy, sacred', **sakro-dhōt-* 'performer of sacred rites' (-*dhōt* 'doer') (seen in Spanish *sacerdote* 'priest');
- **sep-* 'to foster, serve, venerate (the dead)', **sep-el-yo-* 'to bury' (see the English loan *sepulchre*);

**spend-* ‘to make an offering, perform a rite, hence engage oneself by a ritual act, to pour a libation’ (compare Latin *spōndēre* ‘to make a solemn promise, pledge, betroth’; see English *respond*, *be responsible*);

**wet-* ‘to blow, inspire, spiritually arouse’, in Germanic **wōd-eno-/* **wōd-ono-* ‘raging, mad, inspired’, hence ‘spirit’, name of the chief Teutonic god, *Woden* in English (seen in *Wednesday*, literally ‘Woden’s day’).

The implications of Indo-European linguistic research were seldom ignored by archaeologists working in the area; they frequently took linguistic hypotheses into account in framing their own research. Archaeology and linguistics have contributed reciprocally in famous cases of Old World ancient history where, for example, archaeology brought forth the tablets and documents of such places as Bogaz-köy (in modern Turkey), Knossos (on Crete), Tel El Amarna (in Egypt) and so on, and then scholars with linguistic skills deciphered and translated them, pushing back the recorded history of this part of the world by several millennia. Such decipherments also contributed to the picture of which languages were spoken, when and where they were spoken, and how they are classified. For example, the picture of the Indo-European family was radically revised by the addition of the languages of the Anatolian branch (in which Hittite is of major importance), which came to light through these discoveries and decipherments. Successful interaction to the mutual benefit of both archaeology and linguistics is perhaps not surprising for cultures with ancient writing systems, which provide written documentation of ancient history. However, linguistic prehistory is able to contribute significantly to cases which lack writing, and indeed it has contributed much to the interpretation of the prehistory of many other regions of the world.

15.3 The Methods of Linguistic Prehistory

Virtually any aspect of linguistics which renders information with historical content or implications for historical interpretations can be valuable in linguistic prehistory. Let’s consider some of these and see how they work in specific examples.

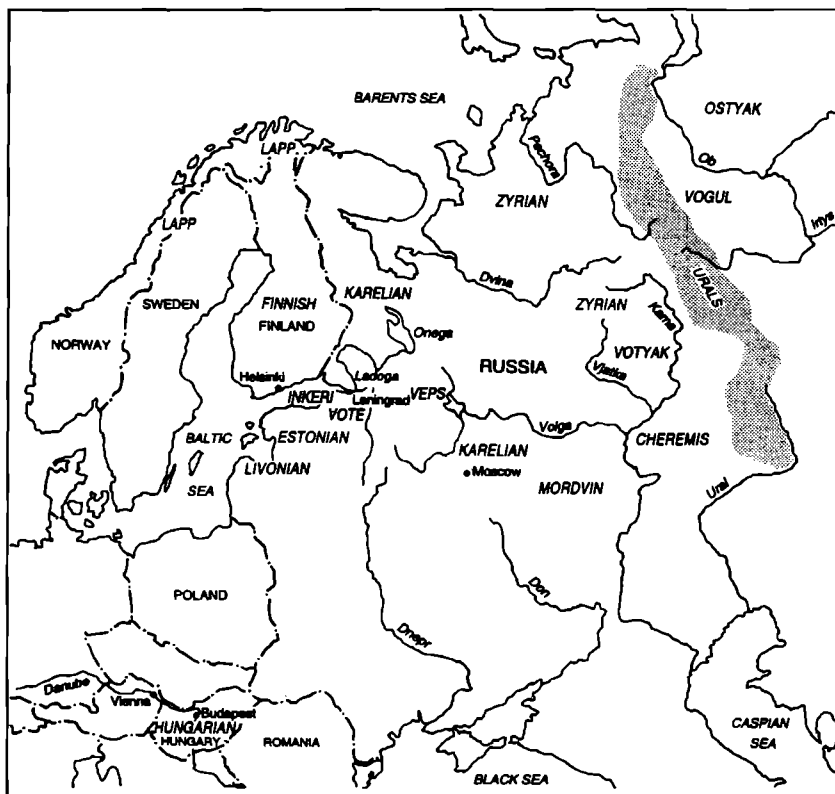
15.3.1 The cultural inventory of reconstructed vocabulary

As we saw in the Indo-European case study (above), much information about the culture and society of the speakers of a proto-language can be

recovered from the reconstructed vocabulary. Here we look at a few other cases, where the cultural inventory of the reconstructed vocabulary has been investigated. In these cases, only the glosses of the items that have been reconstructed in these proto-languages are given. (For the actual forms and details of the studies, see the references cited after each case.)

15.3.1.1 Proto-Finno-Ugric and Proto-Uralic culture

Uralic is a language family of about twenty-five languages spoken across northern Eurasia. It has two major branches, Samoyed and Finno-Ugric (which includes Finnish, Estonian and Hungarian among its languages) (see Map 15.1). Study has dealt with both Proto-Uralic culture and Proto-Finno-Ugric culture based on the reconstructed vocabulary, and so we look at each in turn.



MAP 15.1: The Finno-Ugric languages (redrawn after Lehtinen 1988: 4)

15.3.1.1.1 Proto-Uralic culture

Analysis of the cultural inventory of reconstructed Proto-Uralic vocabulary reveals aspects of the life of a Stone Age hunting people. Bearers of Proto-Uralic culture knew and presumably utilised the following things which reflect their culture:

Hunting, fishing and food terms: bow, arrow, bow string, knife; egg, fish, berry, bird-cherry, hare, to hunt/chase.

Other tools, implements, clothing and technology: needle, belt, glue, birch-bark, drill, cord/rope, handle, (lodge)pole, bark/leather, corral/fence.

Travel and transport: ski, to row, crossbar (in boat).

From such evidence, Péter Hajdú (1975: 51–9) concluded that the Proto-Uralic people were engaged in hunting and fishing, with close connections to water. Their food was mostly fish and game. They travelled in boats, on skis and in sledges (sleighs). Hajdú doubts that they were involved in reindeer breeding, since reindeer breeding is fairly recent, but believes, rather, that wild reindeer was ‘one of the most important prizes for the hunter, hence the variety of names for it’ (Hajdú 1975: 54). He also believes that ‘pig’ and probably also ‘sheep’ were known through contact with Indo-European neighbours, but that pig breeding began only later. In the realm of religion, he thinks that ancestor worship and gods in natural phenomena were typical (Hajdú 1975: 58). He finds animism suggested by cognates for ‘evil spirit’, ‘lord (of underworld)’, ‘giant’ (with compounds found in disease names), and ‘spirit, fall into a trance’ (see Campbell 1997b for details and other references).

15.3.1.1.2 Proto-Finno-Ugric culture

The reconstructed Proto-Finno-Ugric vocabulary is much more complete than that of Proto-Uralic and provides a relatively full picture of the cultural inventory of the speakers of proto-language. It includes the following:

Fishing and water: fish, gill, fish-scale, roe, salmon, sturgeon, fish species (eleven other terms), fish’s air bladder (two distinct forms), to spawn, fish-trap, weir/dam, fish weir (three terms), seine, net (two terms), to fish with net, fishing pole, nibble/bite, oar, boat, boat rib, to row, to wade/ford, to swim, to sink, to float/travel by water, lake, river, pond, stream, current, deep hole, inlet, flood, water, wave, swamp, bog, marsh, tapeworm (three terms).

Hunting and animal foods: egg, duck species (three different terms), grouse (two species), swan, loon, cattle, udder, sheep, pig, bull, moose, hare, trap, snare/sling, snare (two terms), honey, honeybee, tallow, butter, fat/lard, grease, soup/broth; bow, bow string, sinew, arrow (three terms), blunt squirrel-arrow, spear, hunt/trail.

Reindeer: reindeer, wild reindeer, female reindeer, tail of reindeer, calf/fawn, herd, horn, hornless, reindeer-trampled field, pasture, rub antlers, drive (animals).

Plant foods: berry, bilberry, cloudberry (arctic raspberry), blackcurrant, raspberry, whortleberry, bird-cherry, mushroom, onion, pine-nuts (> 'turnip' in Finnish), flour, gruel, porridge, grain, thick soup, patch of slashed and burned land, planting/sowing.

Technology (tools and implements): basket, birch-bark basket, birch-bark drinking vessel/spoon, birch-bark pail, box/vessel, birch-bark knapsack (two terms), ski (three terms), cradle, receptacle, pot/kettle, trough, cord/rope, lasso/lariat, bow/net, strap, hook, comb, knife, handle, needle/awl, spoon, hammer, auger, chisel, straw-chopping tool, glue, bench, metal/copper/bronze, silver/soft metal, gold/bronze.

Building: storehouse/shed, scaffolding/shed, door, crossbar, wall, shelter, corner, hut/house, canopy/curtain, roof, top of tent, tent-pole, birch-bark roofing, village, dwelling, pole, beam, staff, post/jamb/pillar, rod, wooden support, willow/wicker, yard/enclosure, pipe/tube, shingle, to build.

Clothing: cloth, patch, sleeve, hook/button, buckle, belt, mitten/glove, shirt, collar/opening for head, braid/stitch, flax.

Climate: melt/thaw, snow, snowstorm, hoarfrost (two forms), ice (two forms), freeze, sledge/sled (three terms), ski (three terms), glassy ice (free of snow), mild winter/weather, summer, autumn.

Social structure and society: tribe/nationality, slave/servant, orphan, tax.

Religion and beliefs: spirit, soul/spectre/shadow, ghost, sorcerer, god/master, god/sky/air/earth, sermon/conjure, divine/pray, curse/conjure/exorcise, incantations/pray, become ecstatic.

Commerce: buy, sell, value/worth.

Agriculture: It is generally thought that there is no evidence of agriculture in Proto-Uralic, but its existence in Proto-Finno-Ugric culture is controversial. Terms for 'wheat, gruel, bread/millet, grain' are reconstructed and they suggest knowledge of agriculture; however, Hajdú's (1975: 57) opinion is that Proto-Finno-Ugric speakers did not know agriculture, based on the lack of reconstructible names for implements and processes connected with agriculture;

for example, no word for 'sowing', 'reaping', 'scythe', 'hoe' and so on can be traced to Proto-Finno-Ugric (Campbell 1997b).

15.3.1.2 Proto-Mixe-Zoquean culture

Mixe-Zoquean is a family of some twenty languages spoken in southern Mexico in the region across the Isthmus of Tehuantepec. It is assumed to have been unified until about 1500 BC, and is considered to be of great cultural significance in the region, since it is argued that bearers of the Olmec archaeological culture (the earliest civilisation in the region) were speakers of Mixe-Zoquean languages (see below). The reconstructed vocabulary reveals the following cultural inventory:

Maize complex: corn field, to clear land, to sow, to harvest, seed, maize, to grind corn, leached corn, corncob, corn gruel, to grind grains, to shell corn, lime (used to soften kernels of corn for grinding).

Other cultivated plants (and food plants): chili pepper, bean, tomato, sweet potato, manioc, a tuber (species); chokecherry, custard apple, avocado, sapote, coyol palm, guava, cacao.

Animals and procurement of animal resources: deer, rabbit, coati-mundi, honey, bee; fish, crab, to fish with a hook, to fish with a net, canoe.

Religion and ritual: holy, incense, knife-axe (used in sacrifice), to write, to count/divine/adore, to dance, to play music, ceremony, year, twenty, bundle of 400, tobacco, cigar, to smoke tobacco (tobacco was used ceremonially).

Commerce: to sell, to pay, to cost, to buy.

Technology: to spin thread, agave fibre, to twist rope/thread, hammock, cord, water gourd, gourd dish, ladder, house, house pole, adobe wall, rubber, ring, arrow, bed, to plane wood, sandals; remedy-liquor (Campbell and Kaufman 1976; Justeson et al. 1985).

15.3.1.3 Proto-Mayan culture

Mayan is a family of thirty-one languages, argued to have begun to separate at around 2200 BC. Both the linguistic and the non-linguistic prehistory of Mayan-speaking peoples has been intensively investigated, perhaps because of the romantic appeal of Classical Maya civilisation. The cultural inventory reflected in the reconstructed vocabulary of Proto-Mayan includes the following:

Maize complex: maize, corncob, ear of corn, roasting ear (elote), atole (a corn drink), to sow, to harvest, to grind, metate (grindstone for corn), to roast (grains), flour, lime.

Other cultivated plants/food plants: avocado, chili pepper, sapodilla, custard apple, manioc, squash, sweet potato, bean, achiote (bixa, a food-colouring condiment), century plant, cotton, tobacco, cigar.

Animals: dog, jaguar, opossum, mouse, gopher, armadillo, cougar, squirrel, deer, weasel, coyote, skunk, fox, bird, crow, vulture, hummingbird, owl, bat, hawk, flea, bee, honey, fly, gnat, ant, louse, spider, tick, butterfly, bumblebee/wasp, scorpion, toad, fish, worm, snake, snail, crab, alligator, monkey, quetzal.

Trees and other plants: nettle, vine, willow, oak, cypress, pine, palm, silk-cotton tree (ceiba).

Religion and ritual: god/holy, writing, paper, evil spirit/witch, priest, sing/dance, drum/music, rattle, tobacco.

Social structure: lord, slave/tribute.

Implements (and other technology): water gourd, trough/canoe, bench, cord, mat, road, house, home, whetstone, axe, toy, hammock, sandals, trousers, to sew, spindle.

Economy and commerce: to pay, to lose, to sell, poor, market, town (Campbell and Kaufman 1985; Kaufman 1976).

15.3.1.4 Cautions about reconstructed vocabulary

Textbooks are fond of repeating warnings about anachronistic reconstructions, which can complicate cultural interpretation based on the reconstructed vocabulary. For example, Bloomfield, in his reconstruction of Proto-Central Algonquian, found cognates which seemed to support reconstructions for a couple of items which were unknown before contact with Europeans, for example 'whisky'. It turns out that the different languages had created names based on the same compound, 'fire' + 'water' (for example, Cree *iskote:w-a:poy*, composed of *iskote:w* 'fire' + *a:poy* 'water, liquid'), and this 'firewater' compound found in each of the languages looked like a valid cognate set to support the reconstruction, though it is due either to independent parallel development or to diffusion of a loan translation (calque) among these languages. We have no secure guarantees against such anachronisms entering our cultural interpretations of the past based on reconstructed vocabulary, although we rely on clues from our knowledge of what things were introduced by Europeans and on the criterion which we will see directly (below) that the age of analysable terms (ones with multiple morphemes) is not as secure as that of unanalysable terms (those composed of but a single morpheme). In actual cases, this problem comes up very rarely; that is, it is not as serious as it might at first appear to be.

15.3.2 Linguistic homeland and linguistic migration theory

A question which has been of great interest in the study of many language families, and especially of Indo-European, is that of the geographical location of the speakers of the proto-language. Two different techniques have been utilised in attempts to determine where speakers of proto-languages lived, that is, where the linguistic 'homeland' (*Urheimat*) of the family was located. We consider each in turn.

15.3.2.1 Homeland clues in the reconstructed vocabulary

The first technique seeks geographical and ecological clues from the reconstructed vocabulary which are relevant to the location of where the proto-language was spoken, especially clues from reconstructed terms for plants and animals. In this approach, attempts are made to find out what the prehistoric geographical distributions were of plants and animals for which we can successfully reconstruct terms in the proto-language, and then these are plotted on a map. The area where the greatest number of these reconstructible plants' and animals' ranges intersect is taken to be the probable homeland of the language family. We will see how this works in the examples considered below.

For the prehistoric geographical distributions of the plants and animals involved, the information which palaeobotany, biology or other fields can provide is relied on. Due to climatic changes and other factors during the last few thousand years, the range of plants and animals is often not the same today as it was in former times. For example, earlier it was argued, based on the reconstruction of **bherǵ-* 'birch', that the Proto-Indo-European homeland lay north of the 'birch line' (where birches grow) which today runs roughly from Bordeaux (France) to Bucharest (Hungary). However, this interpretation failed; the birch has shifted its habitat significantly over time and formerly extended considerably to the south, and furthermore it has always been present in the Caucasus region (Friedrich 1970: 30). That is, to locate the birch's distribution during Proto-Indo-European times, we must rely on the results of palynology (the study of ancient pollens). While the case of the birch's earlier distribution is clear, this can make matters difficult, since palynological information may not yet be available for some of the regions in question. Also, in many cases we may have only the roughest of estimates concerning the time when the proto-language was spoken. It is difficult to correlate the distribution of ancient plants based on palynology and of languages without some idea of the period of time at which their respective distributions are being correlated (Friedrich 1970).

15.3.2.2 Linguistic migration theory

The other technique, called *linguistic migration theory*, looks at the classification (subgrouping) of the family and the geographical distribution of the languages, and, relying on a model of maximum diversity and minimal moves, hypothesises the most likely location of the original homeland. The underlying assumption is that when a language family splits up, it is more likely for the various daughter languages to stay close to where they started out and it is less likely for them to move very far or very frequently. Therefore, turning this process around, if we look at today's geographical distribution of related languages, we can hypothesise how they got to where they are now and where they came from. This procedure deals not with the actual geographical spread of the languages of the family, but rather with the distribution of members of subgroups within the family. The highest branches on a family tree (the earliest splits in the family) reflect the greatest age, and therefore the area with the greatest linguistic diversity – that is, with the most representatives of the higher-order subgroups – is likely to be the homeland. This is sometimes called the *centre of gravity* model (after Sapir 1949: 455). Lower-level branches (those which break up later) are also important, because they may allow us to postulate the direction of later migration or spread of members of the family. In this model, we attempt to determine the minimum number of moves which would be required to reverse these migrations or spreads to bring the languages back to the centre of gravity of their closest relatives within their individual subgroups, and then to move the various different subgroups back to the location from which their later distribution can be accounted for with the fewest moves. In this way, by combining the location of maximum diversity and the minimum moves to get languages back to the location of the greatest diversity of their nearest relatives, we hypothesise the location of the homeland.

Let's consider some of the better-known cases in which these two techniques have been employed in order to get a feel for how they work.

15.3.2.3 Proto-Indo-European homeland

There is a very large literature on the question of the Proto-Indo-European homeland, and so only some of the more salient things typically talked about in these studies will be mentioned here (for an excellent survey and evaluation, see Mallory 1989). While there are a number of competing hypotheses, most mainstream historical linguists favour the view which places the Proto-Indo-European homeland somewhere in the Pontic steppes–Caspian region. The evidence for this comes from linguistic

migration theory, interpretation of geographical and ecological clues in the reconstructed vocabulary of the proto-language, loans and the location of their neighbours at the time, and correlations with archaeology.

Proto-Indo-European tree names have been at the centre of homeland considerations, and Proto-Indo-European **bhāgo-* 'beech' has been given much weight. Traditionally, it was held that the beech did not grow to the east of a line running from Königsberg (in East Prussia) to Odessa (in the Crimea). This would seem to place constraints on the location of the Proto-Indo-European homeland, locating it essentially in Europe. However, there are various difficulties with this assumption. There are doubts about the original meaning of the word; the cognates do not all refer to the same tree; Greek *phēgós* means 'oak' and the Slavic forms mean some sort of 'elder', as for example Russian *buziná* 'elder(berry)'; and no reflexes are known from Asiatic Indo-European languages. If **bhāgo-* did not originally mean 'beech', then arguments based on the distribution of beeches in Proto-Indo-European times would be irrelevant. There are phonological problems in that the sounds in the putative cognates for 'beech' in some branches of the family do not correspond as they should. Finally, two species of beech are involved and the eastern or Caucasian beech was (and still is) present in the Caucasus and extended into the Cossack steppe. That is, many Indo-European groups would have been familiar with it, not just those of Europe west of the infamous Königsberg–Odessa line (Friedrich 1970: 106–15). The problem with the arguments for the homeland based on this distribution of 'birch' has already been mentioned above; the current distribution of birches is not the same as it was in Proto-Indo-European times, and this nullifies the original argument.

Another important participant in the discussion has been Proto-Indo-European **loksos* 'salmon', which was formerly thought to have a limited distribution, involving rivers which flowed into the Baltic Sea – this was seen as indicating a Northern European homeland. However, the original meaning of the word appears to include not only 'salmon' but also species of salmon-like trout which are found in a very wide distribution which also includes the Pontic steppes and Caspian region, the current best candidate for the homeland (Mallory 1989: 160–1). The centre-of-gravity model, when applied to Indo-European, also suggests this area.

15.3.2.4 Proto-Algonquian homeland

Frank Siebert (1967) found some twenty Proto-Algonquian terms for plants and animals whose distributions overlap in southern Ontario;

these animal terms are included among the various ones reconstructed for Proto-Algonquian: golden eagle, pileated woodpecker, oldsquaw, common raven, quail, ruffed grouse, kingfisher, common loon, nighthawk, sawbill duck, seal, raccoon, lynx, squirrel, flying squirrel, moose, porcupine, skunk, fox, bear, woodchuck (groundhog), buffalo (bison), caribou, buck, fawn, beaver, muskrat, weasel, mink, white spruce, tamarack (larch), white ash, conifer–evergreen tree, elm, alder, basswood (linden), sugar maple, beech, willow, quaking aspen; black bass, lake trout, northern pike and brown bullhead. From this he concluded that the original homeland lay between Lake Huron and Georgian Bay and the middle course of the Ottawa River, bounded by Lake Nipissing and the northern shore of Lake Ontario. Dean Snow (1976) reconsidered the Proto-Algonquian homeland focusing on only the names of species whose ranges were most sharply defined; these included five tree names and six animal terms. This resulted in a broader homeland than Siebert had defined, a homeland defined most clearly by the overlap in the territories of the ‘beech’ and ‘tamarack’ – the Great Lakes lowlands east of Lake Superior, the St Lawrence valley, New England and Maritime Canada. This was bounded on the west by the Niagara Falls in order to accommodate the reconstructed word for ‘harbour seal’. This constitutes a large hunting and trapping zone for nomadic bands. (Considerations mentioned below give a different picture of the Proto-Algonquian homeland.)

15.3.2.5 Proto-Uto-Aztecan homeland

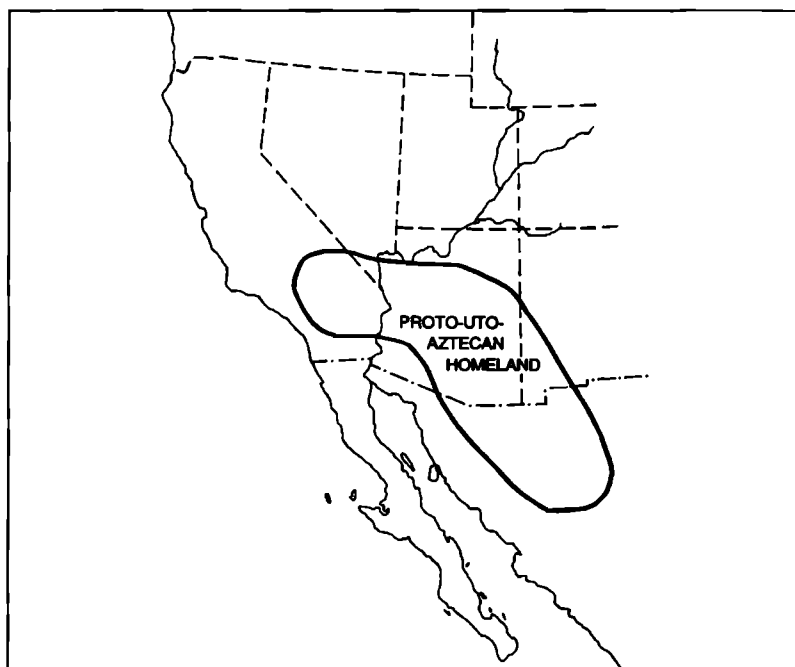
For the Uto-Aztecan family, the results are interesting but not so definitive. Early work on the Proto-Uto-Aztecan homeland had suggested the region between the Gila River and the northern mountains of north-west Mexico, though later work showed that not all the items upon which this conclusion was based could actually be reconstructed in Proto-Uto-Aztecan. Terms which can be reliably reconstructed include, among others, ‘pine’, ‘reed/cane’ and ‘prickly pear cactus’, upon which considerable attention has been focused. Based on nine certain reconstructions and eighteen less secure but likely reconstructed terms, the Proto-Uto-Aztecan homeland was interpreted to be in ‘a mixed woodland/grassland setting, in proximity to montane forests’, and this fits a region across south-eastern California, Arizona and north-western Mexico (see Map 15.2) (Fowler 1983).

The results for the Proto-Numic homeland, however, are much more precise. Numic is a subgroup of Uto-Aztecan (to which Shoshoni, Ute and Comanche belong, as well as several others from southern California to

Oregon and across the Great Basin into the Great Plains). Catherine Fowler (1972: 119) found that

The homeland area for Proto-Numic . . . must have been diverse in elevation, allowing for stands of pine and pinyon, but also for such mid- to low-altitude forms as cottonwood, oaks, chia, cholla and tortoises; two, the homeland area was probably in or near desert zones capable of supporting prickly pear, chia, lycium, ephedra, cholla, tortoise, . . . three, based on the presence of proto-forms for cane, crane, heron, mud-hen, tule [reeds], cattail and fish, the area probably contained marshes or some other substantial water sources.

She concludes that the Proto-Numic homeland was in Southern California slightly west of Death Valley.



MAP 15.2: The Uto-Aztecan homeland (redrawn after Fowler 1983: 233)

15.3.2.6 Proto-Salishan homeland

Salishan is a family of twenty-three languages spoken on the north-west coast of North America and into the interior as far as Montana and Idaho. From more than 140 reconstructed plant and animal terms in Proto-Salishan, most of which occur throughout the area and thus are of

less value in localising the homeland, M. Dale Kinkade (1991: 143) has determined that some 'two dozen represent species found only on the coast, and hence suggest a coastal, rather than an interior, homeland for the Salish'. These terms include 'harbour seal', 'whale', 'cormorant', 'band-tailed pigeon', 'seagull' (two terms), 'flounder', 'perch', 'smelt' (two terms), 'barnacle', 'horse clam', 'littleneck clam', 'cockle', 'oyster', 'sea cucumber', 'sea urchin', 'red elderberry', 'bracken fern', 'bracken root', 'sword fern', 'wood fern', 'red huckleberry' (two terms), 'salal' (a plant), 'salmonberry' (two terms), 'seaweed', 'red cedar' and 'yew' (Kinkade 1991: 144). Several of these strongly suggest a coastal origin, but not all are equally good as evidence. The terms for 'band-tailed pigeon', 'oyster', 'barnacle', 'sea urchin' and 'flounder' would be supportive, but 'similar forms occur widely throughout the area in several non-Salishan languages and may in the long run turn out to be loanwords; for example, "sea cucumber" and "seaweed" were probably borrowed from neighbouring Wakashan languages' (Kinkade 1991: 147). Proto-Salishan speakers, with their coastal homeland, 'must also have had access to mountains, in particular the Cascade Mountains, because they had names for mountain goats and hoary marmots, both of which are found only at higher elevations' (Kinkade 1991: 147). Based on the distribution of 'bobcats' (not far up the Fraser River) and 'porcupines' and 'lynx' (which did not extend past southern Puget Sound) – for which Proto-Salishan terms are reconstructible – the homeland is further pinpointed:

extend[ing] from the Fraser River southward at least to the Skagit River and possibly as far south as the Stillaguamish or Skykomish rivers . . . From west to east, their territory would have extended from the Strait of Georgia and Admiralty Inlet to the Cascade Mountains. An arm of the family probably extended up the Fraser River through the Fraser Canyon. (Kinkade 1991: 148)

15.3.2.7 Uralic and Finno-Ugric homelands

Much research has been done on the Proto-Uralic and the Proto-Finno-Ugric homelands. The homeland studies often did not distinguish between Proto-Uralic and Proto-Finno-Ugric (a daughter of Proto-Uralic), and many scholars placed the homeland of both in the same location. Information from linguistics, archaeology, human genetics and other areas has been correlated, but the results unfortunately do not match completely in all instances, leading to divergent hypotheses. For example, the Uralic peoples today have no common culture and are 'racially'

(genetically) diverse – all Uralic-speaking peoples have received cultural and genetic traits from several directions, in several cases sharing more with non-Uralic neighbours than with other Uralic groups. Genetic counts find the Finnish gene pool, for example, to be made of c. 75 per cent Western ('Caucasian') elements and c. 25 per cent Eastern ('Mongoloid'), although Finnish's linguistic relatives are found mostly to the East. To complicate the picture further, recent archaeological research shows an unbroken cultural continuity in Finland from the Comb Ceramic period (c. 3500–3000 BC) to the present.

Study of the Finno-Ugric homeland has an ample history, though earlier proposals assigning the homeland to central Asia, southern Europe, the slopes of the Altai Mountains, and the like, have now largely been discounted. The candidates that remain differ from one another mainly according to the size assumed for the area of the original homeland. These fall reasonably well into three groups: (1) the region of the middle course of the Volga River, (2) the northern Urals and the nearby region, and (3) the broad area between the Urals and the Baltic Sea (see Map 15.1).

Plant and animal terms were presented as supporting evidence for the first view, which is widely held, that the homeland was in the region of the Middle Volga. In the second view, also widely held, the homeland would have been further east and north, between the Urals and the Volga-Kama-Petchora area or on both sides of the Ural Mountains. Supporters of the third view believe that the Proto-Uralic population, at least in its final phases, and perhaps also the Proto-Finno-Ugric population, may have occupied a rather wide area from the Urals to the Baltic Sea, based on the notion that hunting and fishing groups need to exploit wide territories for their subsistence. Ethnographic analogies from sub-Arctic peoples of both the Old and New Worlds have been called upon for supporting evidence, with examples of some reindeer and caribou hunters who travel over 1,000 kilometres twice yearly as they follow the migrating herds of deer. For example, Tavgi Samoyed hunters in the Middle Ages travelled 600 to 700 km one way as they followed the deer. Korhonen (1984: 63) was of the opinion that while hunting societies typically exploit wide ranges, the proto-language could not have remained unified for long if the speakers were spread from the Ural mountains to the Baltic. For Korhonen, such a picture could be true, if at all, only briefly at the very end of the unified Finno-Ugric period, the earlier homeland must be sought in a smaller area. Sammallahti (1984: 153), on the other hand, points out that a journey from Lake Ladoga (in the Baltic region) to the Urals (c. 1,200 km) is no longer than

from one extreme of the Lapp territory to the other (c. 1,500 km), and he therefore supposes that a Proto-Uralic or Proto-Finno-Ugric population could have lived in the area between Finland and the Urals and still maintained a relative linguistic unity. Hajdú argues that fishing kept the Finno-Ugric people to relatively fixed bases, that 'their manner of life offers no reason for extending their homeland as far as the Baltic' (1975: 38). In any event, most scholars assume that the relative homogeneity of the family was broken up by the introduction of neolithic techniques and agriculture from areas south of the Proto-Uralic and Proto-Finno-Ugric homeland, and that the onset of farming and cattle herding – factors contributing to sedentarism – probably contributed to diversification of the family.

Ravila (1949), employing the techniques of linguistic migration theory, noticed that the Finno-Ugric-speaking groups are spread geographically today in a way that reflects their internal relationships (degree of relatedness), as though the modern situation were created by movements of these groups to settle in the economically most favourable sections of their former overall territory. Indeed, the region around the middle course of the Volga River with its Oka and Kama tributaries appears to be a Finno-Ugric centre of gravity; speakers of Mordvin and Cheremis (Finno-Volgic subgroup) and Votyak (Permic subgroup) live in this region as neighbours, though representing diverse branches of the family.

Proto-Finno-Ugric vocabulary offers clues for delimiting the homeland; some plant and animal names and some culture words have been considered relevant. The words for 'honeybee' and 'honey' have been emphasised. These were borrowed from Proto-Indo-Iranian. The area where such contact could have taken place was the region of the middle course of the Volga River, where apiculture was practised in one form or another from the earliest times. The honeybee was unknown in Siberia, Turkestan, Central Asia, Mongolia and most of the rest of Asia, but was found in eastern Europe west of the Urals with a northern border coinciding with that of the oak. This area of bee-keeping is considered one of the clues to the Proto-Finno-Ugric homeland.

There are a sizeable number of reconstructed Proto-Finno-Ugric plant names, but most of these are found in a wide area and are thus not very helpful in limiting the homeland. However, reconstructed tree names have been vigorously discussed in this regard, and five principal trees have played a role: 'spruce' [*Picea obovata*], 'Siberian pine' [*Pinus sibirica*], 'Siberian fir' [*Abies sibirica*], 'Siberian larch' [*Larix sibirica*] and 'brittle willow' [*Salix fragilis*]/'elm' [*Ulmus*] (outside the Balto-Finnic subgroup the cognates mean 'elm' [*Ulmus*]; compare Finnish *salava*

'willow' and Hungarian *szil* 'elm'). According to Hajdú (1969, 1975), the Finno-Ugric homeland could be located only in an area where all these trees were found at the appropriate time. The only place which fits temporally and geographically is from the Middle Urals towards the north, including the lower and middle course of the Ob and the headwaters of the Petchora rivers in the area of the northern Urals.

Other sorts of vocabulary have also been part of the picture. Hajdú (1975: 34) also takes 'hedgehog' (compare Finnish *siili*, Hungarian *sül*) as evidence of the Finno-Ugric homeland; hedgehogs are not found east of the Urals, but do extend as far north as 61° latitude. A word that has given rise to much speculation is 'metal', with cognates in nearly all Uralic languages meaning 'copper, iron, ore, metal'. Since Uralic dates to the Stone Age, such an ancient term for metal is significant. Nevertheless, it is important to keep in mind that a metal term of similar shape is found widely also in Indo-European languages, as well as in Sumerian, so that it may be a very old widely borrowed word. It has also often been argued that the lack of old terms for 'sea' ('ocean') in Finno-Ugric languages points to a landlocked original homeland (for example, Finnish *meri* 'sea' is a loanword from Baltic Indo-European). There are, however, abundant freshwater terms in the Finno-Ugric vocabulary (see above). Of course, arguments from negative evidence can never be fully persuasive, although this one has been popular.

Evidence for the original homeland has also been sought in contacts with other languages. Proto-Finno-Ugric has a significant layer of loans from Indo-European, specifically Indo-Iranian. If we knew more exactly the location of Indo-European and of the Indo-Iranian branch which so influenced Proto-Finno-Ugric, we would be able to locate more precisely the Proto-Finno-Ugric homeland. The contacts that led to these loans could scarcely have happened anywhere else but eastern Europe (Joki 1973; Campbell 1997b).

15.3.2.8 Cautions concerning linguistic homelands migration theory

In linguistic migration theory, the homeland of a language family is inferred to be in the area represented by the greatest diversity (largest number of subgroups) for which the minimum number of moves (migrations) would be required to bring the speakers of the diverse languages back to one place. On the whole, the inferences afforded by this method are strong, and few documented cases fail to conform. In principle, however, it is not difficult to imagine rather straightforward situations in which linguistic migration theory would fail to produce reliable

results. For example, suppose a language family with a number of subgroups had once been found in one particular geographical area, but something forced all their speakers to abandon that area, say a volcanic eruption, a drought, an epidemic or the onslaught of powerful aggressors. In such a case, it is possible that many of the migrating speakers of the different subgroups could end up bunched relatively closely together in a new area, particularly if driven until they encountered some serious obstacle such as insurmountable mountains, an ocean, inhospitable lands without sufficient subsistence resources, or other peoples who prevented entry into their territory. It is also possible that, rather than being driven, several groups speaking languages of the same family might independently be attracted to the same area (or nearby areas), for example to take advantage of better resources available there, to forge alliances with other groups of the area, and so on. In such scenarios, it is in principle possible that we might find that the greatest linguistic diversity would in fact not be in the original homeland, but in the new area where the groups come to be concentrated. Another problem for linguistic migration theory would be the possible situation in which all the languages of a family in the former area of greatest diversity were lost with no trace (where the speakers were annihilated by war or pestilence or whatever), or where the inhabitants remained but their languages were replaced by some other unrelated language or languages. In such a situation, what may appear to be a language family's area of greatest diversity today may not have been that in former times.

The fact that such counter-examples could exist means that the conclusions which we draw from linguistic migration theory can never be absolute, but rather remain inferences, warranted by the evidence but not proven. In our attempts to understand the past, we accept that migration theory has a stronger probability of being correct than any random guess we might make which is not based on these principles. That is, all else being equal, in the absence of other information to help us answer the question, our inference about original homeland based on linguistic migration theory has a better chance of being right than anything else we have to go on.

There are similar problems in relying on clues from reconstructed vocabulary for determining the most likely location of the homeland. One is that groups may migrate to geographical zones where certain flora or fauna of the homeland area are no longer found and as a result lose the words which refer to those items. In such a case, those languages lack the sort of evidence upon which we typically rely to infer the homeland. It is possible that in some cases so many languages have left

and as a result lost the relevant vocabulary that these items could not be reconstructed in the proto-language and therefore the evidence for inferring the homeland would be inadequate. To take a specific example, Goddard (1994: 207) finds the terms which Siebert reconstructed 'consistent with the homeland of Proto-Algonquians being somewhere immediately west of Lake Superior' (see above), but points out the circularity of the method. Words for 'harbour seal' would typically only survive in languages in areas where harbour seals are found, leaving out languages (and hence regions) to the west which lacked a cognate for this word. In fact, Goddard concluded that the Proto-Algonquians were located more to the west based on other information, especially the distribution of the languages and the nature of the innovations which they share.

Another problem has to do with instances where the original word is not lost, but its meaning has shifted. Sometimes in such cases it is not sufficiently clear what the proto-meaning may have been to be able to make inferences about the geographical location of its speakers. For example, as mentioned, tree names have played an extremely important role in identifying the Proto-Indo-European and the Proto-Finno-Ugric homelands. If we know what tree names the proto-language had and if we can figure out the geographical distribution of these trees during the time when the proto-language was spoken, we can narrow the homeland down to an area where the distributions of all the trees known in the proto-language intersect. However, semantic shift in some of the tree names to accommodate the fact that the original tree is not found in the new areas to which some groups have migrated, or a shift in the name to accommodate new kinds of trees found in the new areas, severely complicates this sort of research. For example, in Proto-Finno-Ugric, the tree name **sala-* is reconstructed on very solid evidence from across the family; however, this means 'willow' in Finnish and its closer relatives but 'elm' in Hungarian and its closer relatives. That is, we cannot be certain what the testimony of **sala-* is for the location of the homeland of Proto-Finno-Ugric, since the distribution of 'elms' and of 'willows' is quite distinct, but presumably one of these is not the original sense, but rather was acquired as the languages moved out of the territory where the original tree name was known. To take an Indo-European example, even **bheræg-* 'birch', which is one of the best supported of Proto-Indo-European tree names, shifted its meaning to 'ash' in Latin and to 'fir, pine, larch' in Albanian, and is absent in Greek (Friedrich 1970: 29–30; Mallory 1989: 161).

Semantic shifts need not always be a serious problem; in fact, in

some cases they can provide us with additional evidence of homeland and migrations away from it. For Proto-Algonquian, a term for 'woodland caribou' is reconstructed based on abundant evidence across many of the branches of the family. This term has shifted its meaning in a few of the languages whose speakers have moved south of the caribou's range. It has come to mean 'bighorn sheep' in the Arapahoan branch and 'deer' in some Eastern Algonquian languages. Because the reconstruction with the meaning 'caribou' is secure on other grounds (distribution across branches of the family), the instances where it has shifted meaning to something else are additional evidence that Arapahoan and those Eastern Algonquian languages involved have moved away from the homeland area where the woodland caribou was found (Goddard 1994).

A problem of a different sort with linguistic homeland models is that they typically imagine a proto-language spoken in a rather restricted region from where groups spread out or migrated to fill up more territory later on. When we go through the exercise of reversing these movements or spreads to the assumed homelands of the various proto-languages, we often find that huge blank areas are left between homelands. The linguistic models seem to imply that these areas were simply not occupied at the time, but typically archaeology finds evidence of human occupation both in the homeland areas and throughout the zones left blank in the linguistic homeland interpretations. These conflicting results need to be accounted for. One possibility is that we have fully misunderstood the nature of how the languages expanded and the territory of the homelands in some cases, though we would like to be able to maintain some faith in these methods. Another possibility is that we do correctly recover the homelands for the most part with our techniques, and that the evidence of human presence in the areas left blank represents languages which have become extinct or been replaced.

15.3.3 Borrowing

Loanwords by their very definition provide evidence of contacts among peoples speaking different languages. The semantic content of loanwords often reveals a great deal about the kinds of contacts that took place and thus about the social relationships among different peoples. The following examples reveal something of the nature and range of historical information that can be retrieved from loanwords in different situations.

A rather straightforward example which illustrates the point about loanwords contributing historical information involves wine-making

terms in German, most of which are borrowed from Latin, for example German *Wein* 'wine' < Latin *vīnum*, *Most* 'new wine, must' < *mustum*, *Kelter* 'wine-press' < *calcātūra* 'stamping with the feet' and so on. On the basis of these loans, the inference is drawn that very probably German-speaking people acquired knowledge of grape cultivation and wine production from the Romans (compare Polenz 1977: 23). Another similar example comes from Xincan (in south-eastern Guatemala) which borrowed most of its terms for cultivated plants from Mayan languages, leading to the inference that Xincan speakers were not agriculturalists until their contact with Mayan groups and that they acquired knowledge of agriculture from their Mayan neighbours. Xincan also borrowed several terms of a commercial nature from Cholan-Tzeltalan (a subgroup of Mayan), including 'to buy', 'to sell' and 'market', which suggests commercial contact between the two groups.

15.3.3.1 The Gypsy migrations

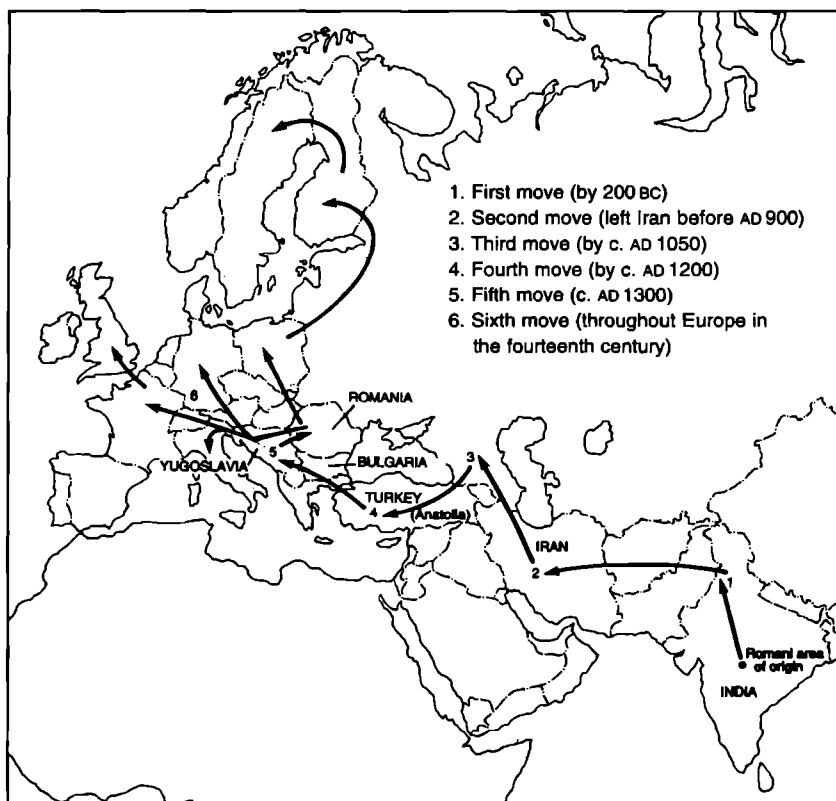
Romani (the language of the Gypsies) belongs to the Central group of Indo-Aryan languages, which includes the ancestors of Hindi, Rajastani and others. We know a fair amount about Romani prehistory from loan-words, a remarkable case (analysed by Kaufman (1973), the source of the information presented here) (see Map 15.3). The Romani area of origin was north Central India. While still there Romani borrowed some words from Sanskrit: 'believe', 'thirst' and so on.

The first move was to north-west India (before about the second century BC). Here the Gypsies borrowed words from Dardic (another branch of Indo-Aryan), for example 'four', 'man-male', 'six', 'whip' and 'to arise'.

The second move was to Iran, where Romani borrowed from Persian ('bag', 'blind', 'breath', 'bridge', 'chicken', 'church', 'donkey', 'friend', 'goat', 'handful', 'handle', 'linen', 'luck', 'mule', 'pear', 'saddle', 'silk', 'sin', 'sock', 'spur', 'star', 'wax', 'wool', 'worm') and from Kurdish ('axe', 'forest', 'garlic', 'honey', 'landlord-host', 'nut', 'steel', 'raise'). (Here the Gypsies split, with one major branch moving south-west into the eastern Mediterranean region; our story ignores them and concentrates on the European Gypsies.) Since there are no Arabic loans in European Romani, it is inferred that they left Iran before the Muslim conquest of AD 900, as there are Arabic loans in all the languages in regions where Islam arrived.

The third move was to the Caucasus by c. AD 1050, where Romani borrowed from languages of the region: for example, from Ossetic

'boot', 'socks', 'wagon'; from Armenian 'bewitch', 'button', 'co-father-in-law', 'deep', 'dough', 'flax', 'forehead', 'hair', 'heart', 'honour', 'horse', 'leather', 'melon', 'oven', 'tin', 'piece'; and from Georgian 'plum', 'tallow'. (One branch of Gypsies stayed in Armenia.)



MAP 15.3: Romani (Gypsy) migrations (based on Kaufman 1973)

The fourth move was to Anatolia by c. AD 1200, where Romani came under Greek influence, taking on some grammatical patterns and borrowing many words from Greek, including 'anvil', 'bell', 'bone', 'buckle', 'cherry', 'crow', 'dew', 'embrace', 'flower', 'grandmother', 'hour', 'kettle', 'key', 'lead', 'market', 'nail', 'nine', 'road', 'seven', 'Sunday', 'tent', 'town' and 'tablecloth'. Since Romani shows no Turkish loans, it is concluded that the European Gypsies left Anatolia (modern Turkey) before the Turks invaded.

In their fifth move, the Gypsies arrived in south-eastern Europe, in the Balkans, by c. AD 1300, where Romani came under influence from

Serbo-Croatian (perhaps also from Bulgarian and Macedonian, other South Slavic languages), as shown in many loanwords, including 'bean', 'bed', 'body', 'boot', 'cloak', 'dear', 'green', 'gun', 'hut', 'ice', 'inn', 'king', 'mountain', 'old woman', 'onion', 'paper', 'rat', 'room', 'sand-dust', 'sin', 'sheet', 'stable', 'street', 'thick', 'world', 'time', 'vein' and 'wild'.

After this, the Gypsies do not share a common history. In the sixth move, they spread throughout Europe during the fourteenth century. Nevertheless, except for the Spanish Gypsies and those who stayed in Bulgaria, all European Gypsy dialects contain a number of Romanian loanwords, though the different Romani dialects do not have the same Romanian loans. Some of the many words borrowed from Romanian are 'beer', 'cream', 'hammer', 'meadow', 'sky', 'swamp' and 'yet'.

This case shows how on the basis of loanwords alone we are able to recover a great deal of information on the migrations and prehistory of the Gypsies.

15.3.3.2 *Turkic loans in Hungarian*

Hungarian contains many loans, perhaps up to 35 per cent of the vocabulary, and the earliest stratum of these is from Turkic ('Chuvash-type'), many of them borrowed before the arrival of the Hungarians in present-day Hungary. The Turkic loans in Hungarian involve chiefly cattle breeding, agriculture, social organisation, technology and implements, dress and religion. These demonstrate that there was extensive contact with Chuvash-type Turkic and that this led to important economic and social changes. Even the name of 'Hungary' is a Turkish loan (see below) (Róna-Tas 1988; Hajdú 1975).

15.3.3.3 *The Olmec-Mixe-Zoquean hypothesis*

The Olmec civilisation was the earliest in Mesoamerica (c. 1200–400 BC) and it had a huge impact on the languages and cultures of the region. The Olmecs have been identified as a Mixe-Zoquean-speaking people whose language was based primarily on loanwords. The geographical distribution of Olmec archaeological sites and the Mixe-Zoquean languages (spoken across the narrowest part of Mexico and in adjacent areas) coincides to a large degree, which initially suggested the hypothesis that if speakers of Mixe-Zoquean were there during Olmec times, perhaps the Olmecs spoke a Mixe-Zoquean language. This hypothesis is strongly supported by the many loanwords from Mixe-Zoquean languages found far and wide among other languages of the Mesoamerican area. Several of these loans are of significant cultural content, including

many terms for things which are diagnostic of the Mesoamerican culture area. Therefore, Mixe-Zoquean speakers had to be involved in a culture important enough to contribute on an extensive scale to others during Olmec times when the culture area was being formed. Examples of Mixe-Zoquean borrowings into the various other languages of the area include the following.

Cultivated plants: 'cacao', 'gourd', 'small squash', 'pumpkin', 'tomato', 'bean', 'sweet potato', as well as 'guava', 'papaya', 'sweet manioc' and others.

Terms in the maize complex (maize was at the centre of Mesoamerican cultures): 'to grind corn', 'nixtamal (leached corn for grinding)', 'tortilla', 'corn dough' and others.

Ritual and calendric terms: 'incense', 'to count, divine' (into Q'eqchi' and Poqomchi' 'twenty-year period', 'twenty', into Yucatec 'calendar priest', into K'iche' and Kaqchikel 'calendar'), 'day names in various calendars of the region', 'sacrifice/axe', 'woven mat' (which functioned as 'throne' for rulers), 'paper' and so on.

Other terms: 'turkey', 'salt', 'pot', 'tortilla griddle', 'ripe', 'fog/cloud', 'child/infant' (a central motif in Olmec art), 'iguana', 'rabbit', 'opossum' among others. Based on these loans, it is concluded that the Olmecs spoke a Mixe-Zoquean language.

This example shows how loanwords can contribute to hypotheses about the ethnolinguistic identity of past cultures.

15.3.3.4 Cautions about interpreting loans

Some cautions are necessary, too, in the cultural interpretation of loanwords, since some loans may not come immediately from the original donor language but via some intermediate language which borrowed the form first. For example, in the case of English *coyote*, which is borrowed from Spanish *coyote*, which originally borrowed the word from Nahuatl *koyō-tl* 'coyote', it would be wrong to propose a direct cultural contact between English and Nahuatl based on the fact that English has a word which is ultimately Nahuatl in origin. (English has several other loans which have this history, borrowed from Spanish, but being originally from Nahuatl, for example *avocado*, *chocolate*, *tomato* and so on.) Also, some loans come about in spite of very limited contact between speakers of the respective languages, for instance English *yak* from Tibetan *gyag* 'yak'.

15.3.4 'Wörter und Sachen'

Wörter und Sachen means 'words and things' in German and has to do with historical cultural inferences that can be made from the investigation of words. For example, one *Wörter und Sachen* technique is based on the 'analysability of words'. It is assumed that words which can be analysed into transparent parts (multiple morphemes) tend to be more recently created in their language than words which have no internal analysis. This technique gives a rough relative chronology for different sorts of vocabulary, but more importantly, it is assumed that cultural items named by analysable terms were also acquired more recently by the speakers of the language and those expressed by unanalysable words represent older items and institutions. For example, by this technique, we would reason that *skyscraper* – analysable into the pieces *sky* and *scraper* – is a newer term in the language and hence a more recent acquisition in the culture than *house* or *barn*, which, since they are unanalysable today, must be older in the language and in the associated culture. As Edward Sapir said, 'we know, for instance, that the objects and offices denoted in English by the words *bow*, *arrow*, *spear*, *wheel*, *plough*, *king*, and *knight*, belong to a far more remote past than those indicated by such words as *railroad*, *insulator*, *battleship*, *submarine*, *percolator*, *capitalist*, and *attorney-general*' (1949: 434–5).

Of course, this kind of inference does not always work out. Sometimes languages borrow names from other languages which result in unanalysable terms coming into the language to represent newly acquired cultural items. For example, in English, *palace* is unanalysable (monomorphemic), but is a loan (from Old French *palais*) and yet is younger than *house* and *barn* (compare Old English *hūs* 'house' and *bere-ern* 'barley-storeroom'). Sometimes older unanalysable names for things are replaced for various reasons by later names which are analysable. For example, replacement of names of things due to taboo and euphemism can result in older items and institutions coming to have analysable names, for example, older *toilet* which is replaced later by analysable *restroom*, or *bathroom* in North America.

Another *Wörter und Sachen* technique involves deriving historical information from cultural items whose names have visibly undergone a change in meaning. Sapir (1949: 439) cites *spinster* 'unmarried female of somewhat advanced age' as an example, since it comes originally from 'one who spins', which suggests that the specialised meaning of 'spinster' is the result of a change and that 'the art of spinning was known at an early time and that it was in the hands of the women'. The age of the form is further suggested by the fact that the suffix *-ster* for

someone who does something is no longer a productive one. To be completely reliable, this technique requires fairly explicit comparative evidence from related languages.

As in the *spinster* example, another technique infers that vocabulary items which have morphological forms which are no longer productive refer to things that are older in the culture. Thus, *ox* and *calf* must be reasonably old cultural items in English, since they both have non-productive plural forms which new nouns entering the language today would not have, *oxen* with the archaic *-en* plural and *calves* with the *f/v* alternation. Such irregularities 'are practically always indicative of the great age of the words that illustrate them and, generally speaking, of the associated concepts'. Sapir cites the example in Nootka (Northwest Coast of North America) of *haʔwiʔ* 'chief' and *qo:ʔ* 'slave' having the irregular, non-productive plural forms *haʔwi:h* 'chiefs' and *qaqo:ʔ* 'slaves', from which we infer a relatively remote antiquity for an office of chief, the institution of slavery and some degree of social stratification (Sapir 1949: 441).

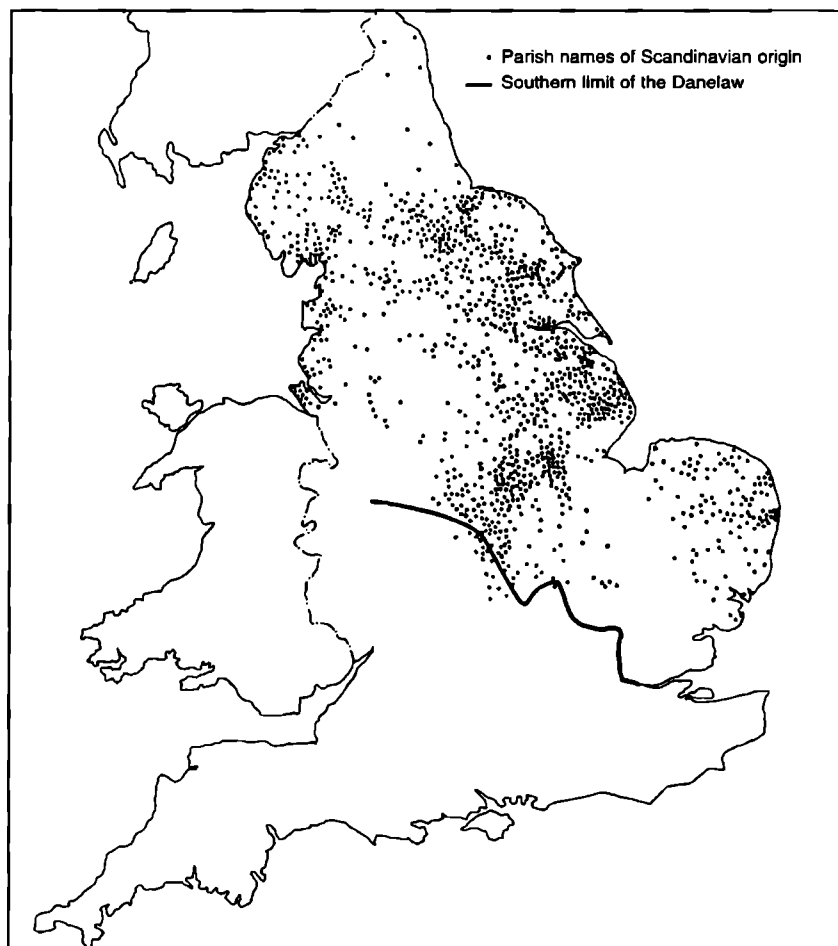
Another *Wörter und Sachen* strategy has already been encountered in the investigation of the cultural inventory revealed in the reconstructed vocabulary of a proto-language. Related to this is the assumption that cultural items which are represented by terms which have cognates widely spread across the languages in the language family are older in the associated cultures than terms which lack such a wider distribution among the related languages.

15.3.5 Toponyms (place names)

Linguistic aspects of place names very often permit historical inferences about languages and the people who spoke them. A much-cited example is that of place names in England whose distribution and linguistic content reflect aspects of history. For example, English place names which end in *-caster*, *-cester* and *-chester* reflect Latin *castra* 'camp' (originally 'military posts') borrowed into Old English as *ceaster*, as in *Lancaster*, *Gloucester*, *Chester*, *Dorchester*, *Winchester* and so on. These provide information on the history of Roman occupation in England. The area with heavy settlement from Scandinavia during Old English times (called the 'Danelaw', north and east of a line running roughly from Chester to London) has over 2,000 place names of Scandinavian origin (see Map 15.2), and these reflect the invasion and impact of Scandinavians in the history of England. The names of Scandinavian origin are recognised from linguistic elements of Scandinavian origin

Linguistic Prehistory

such as *-by*, from Old Norse *by* 'settlement' ('village, town'), as in *Busby*, *Derby*, *Rugby*, *Grimsby*; *-thorp*, from Old Norse *þorp* 'village', as in *Winthorp*, *Scunthorpe*; *-waite/-thwaite*, from Old Norse *þveit* 'clearing', as in *Micklethwaite*. This distribution is seen in Map 15.4. In the region south of the Danelaw, names with analysable Anglo-Saxon elements predominate, for example Old English *-hām* 'home' (used also in the sense of 'town, village', as in *hamlet*), seen in places with *-ham*, as in *Birmingham*, *Buckingham*, *Chatham*, *Durham*, *Nottingham* and so on; and *-tūn* 'town', seen in the *-ton* of *Arlington*, *Burton*, *Kensington*, *Southampton* and so on.



MAP 15.4: Distribution of place names of Scandinavian origin in England
(redrawn after Wakelin 1988: 24)

The evidence from place-name etymology shows that although today Xincan speakers are relegated to a very small area near the coast in south-eastern Guatemala, in former times Xincan territory was much larger. This is demonstrated by place names found in the region which have an etymology in Xincan but not in any other language. A few examples, with their probably Xincan sources, are:

Ayampuc: *ay*- 'place of' + *ampuk* 'snake' (Ayampuc is on a snake-like ridge)

Ipala: *ipal'a* 'bath' (the volcano of Ipala has a crater lake)

Sanarate: *šan*- 'in, at' + *aratak* 'century plant'

Sansare and *Sansur*: *šan*- 'in, at' + *šar*- 'flats, coast'.

It is interesting in this case that J. Eric S. Thompson, the famous Mayan archaeologist and explorer, concluded from place names ending in *-agua*, *-ahua*, *-gua* and *-hua* that there had been what he called an 'Agua people' in the region, a non-Mayan people who were displaced by invading lowland Maya (Chortí speakers) (1970: 98–9). On closer inspection, however, many of Thompson's *-agua* place names appear to be based on Xincan *šawi* 'town, to dwell'. Some of the place names involved are: Xagua, Jagua, Anchagua, Sasagua, Eraxagua (*ira*- 'big'), Conchagua, Comasahua and Manzaragua. When Spanish speakers began to record these names, since Spanish had no equivalent of the Xincan retroflex laminal fricative /ʂ/ (which varies with /ʃ/ in some varieties), Spanish speakers rendered it as <s>, <x> (/ʃ/ in Guatemalan Spanish) or <r>. Later, *ʃ* changed to /x/ (velar fricative), spelled <j> in Standard Spanish. Thus, these place names appear to contain reasonable renditions of Xincan *šawi* 'town'; Thompson's *Agua* people appear to have been Xincan speakers.

An often-mentioned but less reliable approach to obtaining information from place names is the same as the *Wörter und Sachen* technique involving the analysability of vocabulary terms, where it is assumed that names which are not analysable are older and that toponyms which can be analysed into component morphemes are younger. Sapir (1949: 436) explains the logic of this: 'the longer a country has been occupied, the more do the names of its topographical features and villages tend to become purely conventional and to lose what descriptive meaning they originally possessed'. From this we infer that the place names *London*, *Paris* and *York*, which are otherwise meaningless today, are older than those with more transparent analyses such as *New York*, *St Louis*, *New Orleans* and *Buffalo*. Though these older place names are unanalysable, they may once have exhibited a more descriptive meaning

or clearer linguistic analysis which was obscured by changes over time (which confirm Sapir's point), as in the case of *London* < Latin *Londinium*, based on a Celtic root *lond-* 'wild, bold'; *Paris* < *Parisii* (the name of a Gallic tribe); *York* < *Jor-vik* (a Scandinavian name containing *vik* 'small bay').

15.3.6 Onomastics (peoples' names)

Often, valuable information for linguistic prehistory can be recovered from names for peoples. For instance, there is evidence of early cultural contact in the ethnonyms for 'Russia' and 'Russian'. As is well known, English *Russian*, German *Russe* and similar names in other European languages derive from the early Scandinavians, a dominant force, in the Novgorod region of Russia, as is reflected in the Finnish word *Ruotsi* 'Sweden, Swedish', a loan from Old Swedish **rōþ(r)s-* 'inhabitant of Roslagen', which was also borrowed into Old Russian as *rust* 'Russia' – the Viking source for these terms for 'Russia' and 'Russian' in these European languages. Finnish *Venäjä* 'Russia', *Venä-läinen* 'Russian' (*-läinen* '-ite'; compare dialectal *Venä*) and Estonian *vene* (dialectal *vend*) 'Russian' tell a different story. The source of these names is actually an old loan from Germanic **veneð*, reflected by Old English *Winedas*, Old High German *Winidā* and Old Norse *Vindr*, names which refer to the 'Wendish' (also called 'Sorbian'), speakers of a Slavic language who lived on the south coast of the Baltic sea. The Hungarian ethnonym is revealing, reflected in German *Ungarn*, Russian *wengry*, English *Hungarian/Hungary* and native Hungarian *Ugry* (< *Ogry*). These reflect the tribal confederation of the *Onogurs* and the close contact between Hungarians and the Onogur-Bulgar Turks. It is by this Turkic tribal name, *on-ogur*, which means 'ten-arrows', that the Hungarians came to be known.

15.4 Limitations and Cautions

So far, we have considered only the various historical linguistic sources of information and how they might be applied to contribute to greater understanding of prehistory. However, we need also to consider potential problems and limitations that we may encounter in attempting to recover the past of a people through historical linguistic evidence. All these names reflect historical events and connections.

Very often, a principal criterion for determining ethnic identity is the language which a group speaks, and anthropologists and linguists often

use language as the most important marker of ethnicity. However, it is well understood that language, culture and human genetics need not coincide and frequently do not. There are many cases where a single culture involves speakers of various languages, where a single language involves diverse cultures, and where human population genetics does not correspond in a straightforward fashion to either cultural identity or linguistic identity. The genetic make-up of speakers of Indo-European languages varies considerably; there is a large difference between speakers of the Indo-European languages in northern India and those of Iceland. Similarly, Finno-Ugric languages are spoken by the very western Caucasian Finns and the very eastern mongoloid Votyaks. Multicultural language groups and multilingual cultural groups (societies) exist, both with or without a relatively fluid gene pool. Language is often a symbol of identity, but it is not the only such symbol, and difference in language does not necessarily mean difference in ethnicity. Ethnic identity can be based on various things other than language, for example shared cultural tradition (heritage), kinship or perceived genealogy, religion, territory, national origin, even ideology, values and social class.

All this notwithstanding, most of the correlations between linguistics and other sources of information in linguistic prehistory assume a more or less clearly identifiable correlation between language and culture (and sometimes also human biology) through time. This raises important questions which call for caution in research in linguistic prehistory. To what extent do groups with a shared cultural tradition and a common language tend to coincide? To what extent does the correlation, when it does exist, tend to last? Unfortunately, on the whole, cultural change and linguistic change are very different in nature. In particular, it is much easier for a group to change its material culture substantially in a relatively short period of time, but a language's structure changes much more slowly. This means that a lack of correlation between language and non-linguistic culture can develop relatively easily.

It is important to acknowledge this problem, but it does not defeat the overall enterprise of linguistic prehistory. Some scholars seem to fear that, if linguistic identity and ethnic identity do not coincide through history, then we can say nothing about prehistory from linguistic data. However, this is short-sighted. We have many sorts of information from 'language history' that tell us about the past: place names, information on contacts from borrowings, cultural inventory from reconstructed proto-languages, and evidence of language spread or migration. This remains historical information regardless of whether there was continuity in the linguistic-ethnic identity. This could be turned around. We cannot

always know from material culture whether the language remained constant, whether new genes filtered into the population, whether a trait of material culture spread across ethnic and language boundaries or spread with the expansion of its bearers into territory formerly associated with other cultural and linguistic groups. The whole point of research in prehistory is to take as much evidence from as many lines as possible to try to answer questions such as these. Knowing that speakers of Proto-Indo-European had horses, cows, wagons, tribal kings and so on is historical information regardless of whether we know their precise ethnic and genetic identity, who their present-day lineal descendants are, and so on, and it would be foolish to ignore such information when trying to come to grips with a fuller picture of prehistory.

Attempts to correlate language with material culture may be complicated by the fact that a single cultural tradition may not be continuous in time, since it may change radically through contact with other cultures. Language, too, can change and even be replaced due to contact with other languages. Thus, how successful can we be when we look at the cultures and languages which we know about today and attempt to project back in time to the human groups with whom each may have been associated in the past? We cannot always know, and for that reason it is very important that the lines of evidence be investigated independently before correlations are attempted. However, when independently established sources of evidence point to the same sorts of conclusions, we can be happier about the plausibility of the conclusions which we reach about prehistory. Linguistic prehistory has an important role to play in prehistory in general.

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Language Index

- Afrikaans, 38, 66, 68, 168
 Afroasiatic, 312–13, 319
 Ainu, 165, 312–13
 Akateko, 71, 86–8, 171, 303
 Albanian, 168, 300–1, 320, 361
 Aleut, 284
 Algonquian, 69, 164, 317, 333, 362
 Algonquian–Ritwan, 317
 Alsea, 304
 Altaic, 312–13, 319
 Amerind, 311–12, 320, 324–6
 Amoy, 58–9
 Anatolian, 132, 168, 345
 Andamanese, 313
 Andaqui, 324
 Anyuak, 305
 Arabic, 58–60, 63, 66, 73, 76, 83–4, 102, 180, 268, 363
 Arandic, 35
 Arapahoan, 362
 Arawakan *see* Maipurean
 Arawak-Taino, 84
 Ari, 323
 Armenian, 72, 168, 180, 184, 316, 364
 Assamese, 168
 Atakapa, 324
 Athabaskan, 164, 304, 312
 Austric, 312
 Austro-Asiatic, 312
 Austronesian, 164, 312, 313
 Austro-Tai, 312
 Avestan, 25, 168
 Awakateko, 75, 171–2
 Aymara, 73
 Balkan Romance, 110
 Baltic, 58, 60, 168, 319
 Balto-Finnic, 42, 169, 218–19, 243–4, 246–8, 305, 358
 Balto-Slavic, 168
 Baluchi, 168
 Bantu, 30–1, 72, 164, 313
 Basque, 58, 83, 163, 165, 312
 Bella Bella, 305
 Bemba, 239
 Bengali, 168
 Berber, 164, 312
 Biloxi, 326
 Breton, 74, 168
 Brule Spanish, 51–3
 Brythonic, 168
 Bulgarian, 168, 300–1, 365
 Burushaski, 165
 Byelorussian, 168
 Cabecar, 324
 Caddoan, 313
 Carib, 84
 Cariban, 59, 164
 Catalan, 110, 168, 180
 Celtic, 84, 167–8, 341, 344, 371
 Central Algonquian, 126–7
 Chadic, 164, 312
 Chatino, 303
 Cheremis, 169, 346, 358
 Chibchan, 164
 Chibchan–Paezan, 319
 Chicomuceltec, 171–2, 337–8
 Chilanga, 148–50
 Chimakuan, 304–5, 309
 Chinantec, 303
 Chinese, 58–9, 164, 180, 184, 193, 199
 Chinookan, 305
 Chinook Jargon, 78
 Chipaya, 324
 Chiricahua Apache, 63–4
 Chocho, 303
 Chol, 61, 65–6, 71–2, 86–8, 127, 171, 174, 302–3

Language Index

- Cholan, 39, 65, 71, 171, 173-4, 331-2
 Cholan-Tzeltalan, 171, 173-4, 176-7, 363
 Cholt'í, 86, 171
 Chontal, 171
 Chortí, 171, 370
 Chuckchi-Kamchatkan, 313
 Chuj, 75, 127, 171
 Comanche, 354
 Congo, 68
 Coosan, 304-5
 Copainalá Zoque, 303
 Coptic, 180, 184
 Cornish, 168
 Cree, 126, 127, 132, 333, 350
 Creek, 74, 326
 Cuitlatec, 302, 319
 Cushitic, 164, 305-7, 312
 Czech, 73, 168
- Dalmatian, 110, 168
 Danish, 91, 110, 168, 305
 Dardic, 168, 363
 Dravidian, 40-1, 42, 59, 72, 74, 164, 301, 312, 313, 319
 Dutch, 58-9, 77, 103, 110, 168, 273, 337
- Early Modern English, 7-8, 11-12, 14-15, 91
 Eastern Romance, 110
 East Germanic, 36, 168
 East Slavic, 168
 Egyptian, 180, 312
 Elamite-Dravidian, 313
 Enets, 169
 English, 5-15, 17, 19-24, 27-9, 31-40, 46-9, 58-63, 65, 66, 67-70, 74-83, 85, 90-7, 99-106, 109-10, 113-14, 116, 137-43, 166-8, 180-1, 184, 191-2, 196, 202, 205-6, 216-17, 227, 231-2, 238-41, 243, 248, 254-81, 264, 284, 287, 293-4, 316, 318-23, 335-8, 341-5, 366-71
- Eskimo, 313
 Eskimo-Aleut, 312-13
 Eskimo-Uralic, 313
 Estonian, 32, 53-6, 169, 218-19, 243, 247-8, 251, 289-90, 296, 305, 346, 371
 Ethiopian Semitic, 305
 Etruscan, 165
 Eurasianic, 313
 Eyak, 304
 Eyak-Athabaskan, 313
- Faeroese, 184
 Faliscan, 168
 Finnic *see* Balto-Finnic
 Finnish, 27, 30, 34, 39-41, 43-4, 53-6, 58-63, 67, 69-70, 73-5, 77, 91, 100, 105, 132-6, 150-2, 169, 181, 218-19, 222-3, 227-9, 232, 237, 243-9, 257, 261, 269, 271, 275, 287, 316-17, 319-20, 346, 357-8, 361, 371
- Finno-Ugric, 32, 59-60, 67, 132, 150-2, 169, 244, 251, 291, 346, 356-9, 372
- Flemish, 168
 Fox, 127
 French, 5-6, 8, 27-8, 31, 33-5, 40-1, 46-7, 58-60, 62-3, 65-8, 74-9, 83, 102-4, 106, 110-11, 113, 116-24, 131, 167-8, 180-2, 184, 189-90, 198-200, 233-4, 239-40, 249, 254-5, 257-66, 274, 277-8, 281, 286, 291-3, 316, 318-19, 322, 341, 343-4
- Frisian, 38, 110, 168, 337
 Fula, 323
- Galician, 110, 168
 Gallo-Romance, 110
 Gaulish, 168
 Gbaya, 316
 Georgian, 180, 184, 364
 German, 7, 9, 28, 32, 34-6, 38-9, 50-1, 58, 66-7, 70, 73, 75-7, 79, 93-4, 100, 103, 105, 110, 140, 166-8, 180-2, 194, 238, 240, 243, 255, 257, 261-3, 265, 268, 272, 275-6, 293-4, 305, 318, 322, 337, 341, 343-4, 362-3, 371
- Germanic, 7, 21, 28; 36-8, 46-8, 58, 60-1, 67, 69, 83-4, 90, 98, 137-45, 166-8, 180, 182, 217, 243-4, 268, 316, 319, 341-3, 345
- Gheg (Albanian), 168
 Gilyak, 165, 313
 Goidelic, 168
 Gothic, 21, 36, 60, 70, 137-44, 168, 217, 243-4, 276, 318, 336, 338
- Greater Q'anjobalan, 171, 173-4, 176-7
- Greek, 5-6, 21, 29-30, 34-5, 59, 70, 73-4, 76, 93, 98, 137-44, 168, 180, 209-15, 238-9, 273-4, 276, 281, 288-9, 296, 300-1, 318, 336, 338, 341, 343, 353, 361, 364
- Gujarati, 168
 Gumuz, 305
- Haida, 304-5, 313
 Halkomelem, 305
 Hamitic, 323
 Hamito-Semitic, 312
 Hanti *see* Ostyak
 Hawai'ian, 79
 Hebrew, 79
 Hellenic, 168
 Hieroglyphic Luvian, 168
 Hindi, 168, 196, 363
 Hittite, 132, 168, 318, 334, 345
 Hmong-Mien, 164
 Hokan, 313
 Honduran Lenca, 148-50
 Huastec, Huastecan, 66, 71, 86-7, 125-6, 171-3, 176, 325, 329-30, 337

Language Index

- Huave, 302-3
 Hungarian, 58, 132-6, 150-2, 169, 346, 359, 361, 365, 371
 Ibero-Romance, 110
 Icelandic, 110, 167-8, 184
 Illyrian, 168
 Indic, 164, 168
 Indo-Aryan, 72, 74, 301, 363
 Indo-European, 21, 46, 67, 69-70, 95, 132, 137-46, 163-4, 166-8, 313, 316-20, 333-4, 340-5, 359, 361, 372
 Indo-Iranian, 167-8, 359
 Indonesian, 59
 Indo-Pacific, 313
 Indo-Uralic, 313
 Ingrian, Inkeri, 169, 346
 Iranian, 164, 168
 Irish *see* Old Irish
 Irish Gaelic, 168
 Iroquoian, 284, 313
 Italian, 26, 28, 59-60, 67, 79, 104, 106, 110-11, 113, 117-24, 168, 180, 182, 184, 249, 262-3, 277
 Italic, 28, 167-8
 Italo-Dalmatian, 110
 Itzá, 87, 171, 173
 Ixcatec, 303
 Ixil, 75, 171-2
 Jakalteko, 66, 75, 87, 171, 303
 Japanese, 58-9, 79, 180, 312
 Jaqaru, 316
 Jicaque, 152-6, 224-5
 Kalapuyan, 304-5
 Kamass-Koibal, 169
 Kannada, 42, 180
 Kaqchikel, 38, 65, 75, 107, 113-14, 127, 156-60, 171-2, 174, 220-1, 264, 303, 316, 366
 Karelian, 169, 248, 346
 Kartvelian, 164, 313, 319
 Khanty *see* Ostyak
 Khoe, 68, 72
 Khoisan, 72, 313
 K'iche', 30, 66, 71, 75, 86-8, 107, 125-7, 156-60, 171, 181, 183, 264, 266, 303, 325, 366
 K'ichean, 74-5, 127-8, 156-60, 171, 173, 176, 181, 302
 Koasati, 325
 Komi *see* Zyrian
 Korean, 60, 312
 Kurdish, 168
 Kwa, 239
 Lacandon, 171, 173
 Lake Miwok, 266, 269, 316, 324
 Lapp, 74, 169, 219, 244, 291-2, 296, 346, 358
 Latgalian, 305
 Latin, 5-6, 21-2, 26-9, 32-8, 40-2, 45-7, 58-9, 67, 70-1, 76-8, 84, 95-9, 102-4, 106, 109, 111, 122, 124, 137-41, 143, 148, 168, 180, 182, 189-90, 211, 215, 239, 248, 252, 254, 256-63, 268-9, 271-4, 276-8, 280-1, 292-3, 318, 319, 322, 338, 341-5, 361-3, 368, 371
 Latvian, 168, 305
 Lencan, 148-50
 Lepontic, 168
 Lithuanian, 25, 60, 138-9, 168, 305
 Livonian, 53-6, 169, 248, 305, 346
 Logooli, 31
 Lower Chinook, 304
 Lushootseed, 305
 Luvian, 168
 Lycian, 168
 Lydian, 168
 Macedonian, 168, 300-1, 365
 Macro-Siouan, 313
 Madi, 323
 Maipurean, 164
 Makah, 73, 130-1, 175-6, 305, 308
 Malay, 58-9, 316
 Malayalam, 74
 Mam, 75, 86-7, 126-7, 171-3, 303
 Mamean, 49, 74-5, 171-3, 176
 Manchu, 312
 Mansi *see* Vogul
 Manx, 168
 Māori, 25, 79-83, 316
 Marathi, 74, 168
 Maya-Chipayan, 313, 324
 Mayan, 30, 38-9, 41-2, 49, 61, 63-5, 67-72, 74-5, 85-8, 98, 106-7, 113, 125-8, 156, 164, 170-7, 180-1, 183, 203, 220, 264, 266, 302-3, 313, 324-5, 328-32, 337, 349, 363, 370
 Mayan-Mixe-Zoquean, 325
 Mazatec, 303
 Menomini, 127
 Miao-Yao *see* Hmong-Mien
 Middle English, 7-9, 13-14, 42-3, 48, 58, 77, 97, 101, 103, 106, 168, 256-7, 262-3, 270, 276, 293-4, 335, 337
 Middle High German, 39, 168, 294
 Miwok-Costanoan, 266
 Mixean, 67-8, 129
 Mixe-Zoquean, 61, 64, 68, 85, 129, 302-3, 325, 349, 365-6
 Mixtec, 303
 Mongolian, 312
 Mon-Khmer, 164
 Mopan, 87, 171, 173
 Mordvin, 169, 346, 358
 Moru, 323
 Mosan, 309
 Motocintlec, 66, 71, 86-8, 126-7, 171, 173

Language Index

- Motor-Taigi, 169
 Munda, 164, 301
 Muskogean, 74, 325
- Na-Dene, 312–13
 Nahuatl, Nahua, 24–5, 33, 58–9, 64–5, 68, 78,
 84, 92, 101, 196, 204–5, 223–4, 232–3,
 235, 302–3, 366
 Navajo, 181
 Nenets, 169
 Nez Perce, 68
 Ngandi, 231
 Ngansan, 169
 Niger-Kordofanian, 313
 Nilo-Saharan, 313, 323
 Nitinat, 73, 130–1, 175–6, 305, 308
 Nivkh *see* Gilyak
 Nootka, Nootkan, 73, 130–1, 175–6, 305, 308,
 368
 North Caucasian, 164
 Northern Samoyed, 169
 North Germanic, 36, 168
 Norwegian, 168, 193, 341
 Nostratic, 311, 313, 319–20
 Numic, 354
 Nungubuyu, 231
- Ob-Ugric, 169
 Occitan, 110
 Ofo, 326
 Ojibwa, 127
 Old Church Slavonic, 25, 168, 317–18
 Old English, 7–10, 17, 22, 27, 32, 34, 36–8,
 42–3, 49–50, 58, 76, 90–1, 93, 95–6,
 101–3, 138–41, 143–5, 168, 180, 202,
 216, 232, 243, 254, 257, 259, 261–3,
 265–6, 270–1, 276, 284, 293, 322,
 367–9, 371
 Old French, 5, 8, 28, 31, 33–4, 58–9, 67, 77,
 92, 102–3, 111, 116, 233, 262–3, 269,
 274, 367
 Old High German, 21, 36, 60, 138, 141, 143,
 145, 168, 244, 276, 294, 316, 371
 Old Icelandic, 268
 Old Irish, 35–6, 168
 Old Norse, 36, 38, 43, 168, 243, 369, 371
 Old Persian, 168
 Old Prussian, 168
 Old Russian, 23, 62, 371
 Old Spanish, 71, 101, 106, 229, 252–3, 258,
 260, 262, 272, 278, 280–1
 Old Swedish, 34, 103, 371
 Oluta Popoluca, 303
 Omotic, 305, 323
 Ossetic, 72, 363–4
 Ostyak, 169, 346
 Ostyak Samoyed *see* Selkup
 Otomanguean, 164, 302
 Otomí, 303
- Pahlavi, 168
 Palaic, 168
 Pama-Nyungan, 35, 164
 Papuan, 313
 Pashto, 168
 Peninsular Spanish *see* Spanish
 Pennsylvania German, 240
 Penutian, 313
 Permic, 169, 358
 Persian, 168, 316, 363
 Phrygian, 168
 Pipil, 19, 42, 92, 180, 182–3, 230–1, 287,
 302–4, 317, 320
 Polish, 168
 Popoloca, 303
 Poqomam, 74–5, 156–60, 171, 174, 330–1
 Poqomchi', 74–5, 98, 127, 171, 174, 220,
 330–1, 366
 Portuguese, 110–11, 113, 117–24, 167–8, 180,
 193, 249
 Pre-English, 202, 206, 217
 Proto-Algonquian, 353–4, 362
 Proto-Australian, 313
 Proto-Balto-Finnic, 53–6, 219, 246–9, 289
 Proto-Bantu, 31, 72
 Proto-Celtic, 35–6, 166
 Proto-Central Algonquian, 126–7, 317–18, 350
 Proto-Dravidian, 40, 42, 67
 Proto-Finno-Ugric, 43, 347–9, 356–9, 361
 Proto-Germanic, 21–2, 27, 35–6, 43, 46–8,
 50–1, 60, 69–70, 95, 109–10, 137–42,
 144–5, 166–7, 182, 217, 244, 276,
 322–3
 Proto-Indo-European, 21–2, 28, 34, 36, 40,
 46–7, 67, 95, 98, 132, 137–42, 144–5,
 166–8, 182, 215, 268, 316, 322, 340–5,
 351–3, 361, 373
 Proto-Indo-Iranian, 358
 Proto-Je, 316
 Proto-Jicaque, 153
 Proto-K'ichean, 98, 107, 127–8, 186
 Proto-Lapp, 292
 Proto-Lencan, 148
 Proto-Mayan, 65, 71, 98, 107, 125–6, 128,
 171–3, 176, 324, 328–32, 349–50
 Proto-Mixe-Zoquean, 67–8, 129, 349
 Proto-Muskogean, 325
 Proto-Nahua, 19, 92, 183
 Proto-Nootkan, 73, 131, 175, 308
 Proto-Numic, 355
 Proto-Quechuan, 160–2, 186
 Proto-Romance, 39, 109–10, 117–21, 124,
 131–2, 148, 167, 182, 247, 249
 Proto-Salishan, 355–6
 Proto-Scandinavian, 36, 43, 70
 Proto-Slavic, 51
 Proto-Tzotzil, 324
 Proto-Uralic, 250, 347–8, 356–9
 Proto-Uto-Aztecan, 64, 196, 235, 354
 Proto-World, 311, 313

Language Index

- Punjabi, 168
- Q'anjobal, 71, 75, 86-8, 127, 171
- Q'anjobalan, 71, 171, 176
- Q'eqchi', 41-2, 71, 74-5, 86-8, 98, 127, 156-60, 171, 174, 303-4, 330-1, 366
- Quapaw, 325-6
- Quechua, 42, 58, 73, 85, 101, 160-2, 239
- Quileute, 305
- Rajastani, 363
- Rhaeto-Romance, 110, 168
- Rithamgu, 231
- Romance, 28-9, 40, 46-7, 67, 104, 109-14, 117-25, 148, 164, 180, 182, 247, 249, 254-5, 277-8
- Romani, 168, 300-1, 363-5
- Romanian, 110, 168, 180, 249, 300-1, 365
- Russian, 23-4, 51, 59-60, 77, 79, 98, 168, 181, 305, 316, 353, 371
- Sahaptian, 68
- Sahaptin, 305
- Sakapulteko, 171
- Salishan, 164, 304-5, 309, 355
- Samoyed, 169, 346
- San, 72
- Sanskrit, 21-2, 25, 29, 40, 46-7, 58, 67, 137-45, 168, 194, 211, 215-16, 318, 334, 341, 363
- Sardinian, 110, 168, 180
- Sayan, 169
- Sayula Popoluca, 61, 63, 85-6
- Scandinavian, 31-2, 38, 58, 79, 181, 368-9, 371
- Scots English, 5, 335
- Scottish Gaelic, 168
- Selkup, 169
- Semitic, 164, 305-7, 312-13
- Serbo-Croatian, 168, 300-1, 365
- Seri, 316
- Shoshoni, 354
- Sierra Popoluca, 302
- Sindhi, 168
- Singhalese, 168
- Sino-Tibetan, 164, 312
- Siouan, 165, 313, 326
- Sipakapense, 171
- Slavic, 39, 98, 167-8, 181, 353, 365
- Slovak, 168
- Slovene, 168
- Sogdian, 168
- Sorbian, 168
- Sotho, 72
- South Caucasian *see* Kartvelian
- Southern Samoyed, 169
- South Slavic, 168, 365
- Spanish, 17-18, 20-1, 25-9, 31-5, 37-42, 45-7, 51-3, 58-61, 63, 65, 67, 70-3, 75-6, 78-9, 83-8, 91-5, 97-8, 100-2, 104, 106, 109-11, 113, 117-25, 167-8, 180-1, 183, 193, 207-9, 221-2, 229-31, 237, 239, 249, 252-3, 255-66, 268, 270-2, 277-8, 280-1, 287, 291, 296, 319, 323, 325, 337-8, 341, 343-4, 366, 370
- Sudanic, 323
- Sumerian, 165, 313, 359
- Swahili, 102
- Swampy Cree, 126, 132, 333
- Swedish, 27, 31-2, 43, 59, 61-2, 74-5, 77, 79, 103, 110, 167-8, 180, 193, 245-6, 257, 287, 305
- Tai, 165
- Tai-Kadai, 164
- Taino, 59
- Takelma, 304, 324
- Tamil, 59, 74
- Tarascan, 165, 302-3
- Tasmanian, 313
- Tatar, 59-60
- Tavgi *see* Ngansan
- Teco, 98, 171-2
- Telugu, 74
- Tepehua, 302
- Tequistlatec, 303
- Tequistlatecan, 302
- Thracian, 168
- Tibetan, 366
- Tibeto-Burman, 164, 301
- Tillamook, 304
- Tlapanec, 303
- Tlingit, 284, 304-5, 313
- Tocharian, 168
- Tojolabal, 66, 71, 88, 171, 203-4
- Tol, 152-6, 224-5
- Tosk Albanian, 168, 301
- Totonac, Totonacan, 64, 180, 302-3, 324
- Totontepec Mixe, 303
- Trique, 303
- Tsimshian, 304-5
- Tulu, 74
- Tunebo, 319, 323
- Tungusic, 312
- Tupian, 165
- Tupi-Guarani, 85
- Turkic, 58-60, 165, 312, 365, 371
- Turkish, 58, 74, 300-1, 364
- Twana, 305
- Twi, 232
- Tzeltal, 71, 86-8, 107, 125-6, 171, 303
- Tzotzil, 61, 63, 66, 71-3, 86-8, 98, 171, 324
- Tz'utujil, 75, 127, 156-60, 171-2, 183, 220, 302
- Udmurt *see* Votyak
- Ugric, 169
- Ukrainian, 168
- Ural-Altaic, 313

Name Index

- Uralic, 163, 165, 169, 250, 312, 313, 317, 319, 346, 356–9
 Uru-Chipayan, 313
 Uspanteko, 75, 107, 127, 156–60, 171
 Ute, 354
 Uto-Aztecán, 19, 24–5, 42, 65, 165, 180, 182–3, 204, 223, 230, 302–3, 317, 354–5
- Veps, 169, 248, 346
 Vogul, 169, 346
 Volgic, 358
 Vote, 169, 243, 247–8, 346
 Votyak, 59–60, 169, 346, 358
 Vulgar Latin, 27, 31, 40, 109
- Wakashan, 304–5, 309, 356
 Warndarang, 231
 Welsh, 168
 Western Romance, 31, 38, 110, 117–19, 167
 West Germanic, 36, 168, 202
- West Slavic, 168
 Wiyot, 317
- Xhosa, 72
 Xincan, 69, 75, 302–3, 363, 370
- Yana, 316
 Yenisei *see* Enets
 Yiddish, 79, 168, 267
 Yucatec (Maya), 65, 107, 125–7, 171, 173, 303, 324, 328–9, 332, 366
 Yucatecan, 68, 171, 173–4, 176–7
 Yuchi, 313
 Yukagir–Uralic, 313
 Yurak *see* Nenets
 Yurok, 317
- Zapotec, 303
 Zoquean, 129
 Zulu, 68, 72
 Zuni, 165
 Zyrian, 169, 346

Name Index

- Aitchison, Jean, 297
 Alvar, Manuel, 189
 Andersen, Henning, 197
 Anttila, Raimo, 60, 64, 77, 89, 95, 219, 288–9, 294, 320
 Arlotto, Anthony, 36, 89
- Bach, Adolph, 293
 Beekes, Robert S. P., 38, 93
 Berlin, Brent, 182
 Bloomfield, Leonard, 126–7, 132, 333, 350
 Brown, Cecil H., 325
 Brugmann, Karl, 18, 188
 Burgess, Gelett, 273
- Callaghan, Catherine A., 68, 266
 Campbell, Lyle, 30, 72–6, 85, 126, 156, 186, 226, 231, 234, 241, 250, 300, 304–6, 310, 313, 319, 324, 332, 347, 349–50, 359
 Cantinflas, Mario Moreno, 104
 Carroll, Lewis, 273
 Caxton, William, 14–15
 Chaucer, Geoffrey, 1, 13–14, 336
 Cicero, 98
- Collinge, N. E., 31
 Corominas, Joan, 85
 Coseriu, Eugenio, 197
- Darmesteter, Arsène, 40
 Delbrück, Berthold, 18, 334
- Ebert, Robert Peter, 294
 Emeneau, Murray B., 302
- Ferguson, Charles, 306
 Fleischman, Suzanne, 110
 Fleming, Harold C., 323
 Fowler, Catherine, 354–5
 Friedrich, Paul, 351, 353, 361
- Gamble, Geoffrey, 68, 266
 Gilliéron, Jules, 189, 194, 293
 Gimbutas, Marija, 340
 Goddard, Ives, 361–2
 Gordon, Elizabeth, 196
 Grassmann, Hermann, 142–3, 145–6
 Greenberg, Joseph, 312–13, 315, 318–20, 323–5
 Grimm, Jakob, 3, 16, 57
 Grimm, Wilhelm, 3

Name Index

Guillotín, Joseph-Ignace, 274

Haas, Mary R., 64, 175, 305, 308, 333
Hajdú, Péter, 347–8, 358–9, 365
Harris, Alice C., 226, 231, 234, 241
Heath, Jeffrey, 231
Heine, Bernd, 238, 241–2, 270
Helmont, J. B. van, 273
Herzog, Marvin, 194–5
Hock, Hans Heinrich, 5, 77
Hogg, Richard M., 38
Holloway, Charles E., 52–3
Hopper, Paul J., 241–2, 270

Jakobson, Roman, 321
Janhunen, Juha, 250
Jespersen, Otto, 91, 285
Joki, Aulis J., 359
Joos, Martin, 282
Joseph, Brian D., 5, 77, 239, 301
Justeson, John S., 65, 68, 332, 349

Kaiser, Mark, 319–20
Kaufman, Terrence, 76, 304, 349–50, 363–4
Kay, Paul, 182
Kimball, Geoffrey, 325–6
Kinkade, M. Dale, 356
Kiparsky, Paul, 296
Koch, Harold, 35
König, Ekkehard, 270–1
Korhonen, Mikko, 292, 357
Krause, Wolfgang, 70, 336
Kuryłowicz, Jerzy, 238

Labov, William, 194–5, 197–200, 285, 296
Lapesa, Rafael, 85
Lass, Roger, 13–14, 336–7
Lehmann, Christian, 242
Lehmann, Winfred P., 282
Lehtinen, Ildikó, 346
Lepellet, René, 190
Leskien, August, 18
Lightfoot, David, 236, 296
Luther, Martin, 93–4

McAdam, John Loudon, 274
MacLagan, Margaret A., 196
Mallory, J. P., 339–40, 352–3, 361
Martinet, André, 45
Meillet, Antoine, 238, 312
Menner, Robert, 293
Milroy, James, 197–8
Milton, John, 274

Nash, Ogden, 3

Öhmann, Emil, 293
Olson, Ronald D., 324
Oltrogge, David, 156

Osthoff, Hermann, 18, 188

Palmer, Leonard R., 101, 190, 293
Pānini, 194
Paul, Hermann, 18, 99, 105, 296
Pinker, Stephen, 5
Polenz, Peter von, 94, 363

Rankin, Robert L., 326
Ravila, Paavo, 100, 257, 261, 358
Reh, Mechthild, 238, 241
Resnik, Melvyn C., 85
Ringe, Donald A. Jr, 322
Róna-Tas, András, 365
Roques, Mario, 189, 293
Ruhlen, Merritt, 320

Sammallahti, Pekka, 357–8
Sandfeld, Kristian, 301
Sandwich, the 4th Earl of (John Montagu), 274
Sapir, Edward, 64, 352, 367–8
Schleicher, August, 188–9
Schmidt, Johannes, 189
Schrader, Otto, 340
Schuchardt, Hugo, 189
Shakespeare, William, 11–12, 89, 103, 254
Shevoroshkin, Vitaly, 319–20
Siebert, Frank, 353–4, 361
Smith-Stark, Thomas, 76, 304
Snow, Dean, 354
Spaulding, Robert K., 85
Spenser, Edmund, 273
Swadesh, Morris, 178–80, 184, 309, 318
Sweet, Henry, 187, 283–4
Sweetser, Eve, 270
Swift, Jonathan, 274

Teeter, Karl V., 317
Thompson, J. Eric S., 370
Traugott, Elizabeth Closs, 238, 241–2, 270–2

Vendryes, Joseph, 63
Verner, Karl, 143–6

Wakelin, Martyn, 369
Wang, William, 198–9
Watkins, Calvert, 168, 340–1
Weinreich, Max, 193
Weinreich, Uriel, 73, 194–5, 298
Wessén, Elias, 27, 32, 34, 36, 43, 103
Winteler, J., 194
Witkowski, Stanley R., 325
Wright, Larry, 296, 298
Wulfila (Bishop), 336
Wundt, Wilhelm, 284

Zeps, Valdis, 305
Zvelebil, Kamil V., 41–2, 67

Subject Index

- accident *see* chance similarities
- accommodation, 61–3, 80–3
- acronyms, 275
- actuation problem, 195, 198
- adaptation *see* substitution
- adstratum *see* linguistic area
- affrication, 42
- allophonic changes *see* non-phonemic changes
- amalgamation, 6, 103, 277–8
- amelioration *see* elevation
- analogical extension, 94–5
- analogical levelling, 92–6
- analogical models, 97–9
- analogical restoration, 289–90, 293–4
- analogy, 6, 89–107, 148, 198–200, 242–3, 256, 267, 273, 277, 288–90, 334
- anaptyxis, 33–4
- aphaeresis, 32–3
- apocope, 32
- apparent-time studies, 196
- archaeology, 186, 339–41, 345, 353, 356–7, 362
- archaisms, 248–50
- areal linguistics, 72–5, 299–310
- assimilation, 23, 26–8, 34–5, 39, 205–6
- back formation, 102, 248
- Balkans linguistic area, 300–1
- Baltic linguistic area, 74, 305
- basic vocabulary, 112, 114, 177–84, 314–16, 319–20, 322, 326
- bilingualism, 57, 61–2
- blending, 104–5, 277, 279
- borrowing, 6, 8–9, 57–89, 92, 112–14, 147, 174–6, 180–1, 188–91, 198–200, 216, 241, 244–6, 273, 285, 299–310, 314–16, 318–19, 326, 328, 339, 353, 356, 358–9, 362–6, 372
- branch *see* subgroup
- breaking, 37–9
- broadening *see* widening
- bundle of isoglosses, 192
- calques, 75–6, 256, 302, 338, 350
- Caucasus linguistic area, 72
- chain shift, 44–9, 172
- chance similarities, 113, 300, 315–17, 322–3, 326
- classification, 108–9, 118, 147, 163–88, 307–8, 328, 339, 345, 352
- clipping, 6, 278–9
- cognate, 46–7, 67–8, 111–14, 178–9, 246, 255, 315–16, 322, 324–5, 353
- cognate sets, 111–13, 122, 124–5, 133, 137–45, 149–62, 243, 319
- cohesion, 227, 232–4, 238–40
- comparative method, 18, 108–62, 188, 201, 218–19, 250, 312, 333–4, 339–40
- compensation, 289–92, 295–6
- compensatory lengthening, 35–6
- compounding, 275–6
- compression *see* clipping
- conditioned sound change, 18, 20, 22–5, 123, 142–5, 202–17
- consonant gradation, 290–1
- constraints problem, 194–5
- contamination *see* blending
- convergence area *see* linguistic area
- correspondence set *see* sound correspondence
- Dahl's Law, 30–1
- daughter languages, 109–12, 115
- deaffrication, 42
- deflection, 265, 294–6
- degemination, 42
- degeneration, 261–4, 266–7, 272

Subject Index

- deletion, 23–4, 31–3, 35–6, 51, 209–11, 214–15, 217–19, 232
- diachronic linguistics, 4
- dialect, 165, 193, 200, 307, 339
- dialect atlas, 189–90, 199–200
- dialect borrowing, 191, 199–200
- dialect geography *see* dialectology
- dialectology, 187–94, 334
- diffused sound changes, 74, 174–6, 328, 330
- diffusion, 72–5, 174–6, 299–310, 314–16, 323, 350
- diffusion area *see* linguistic area
- diphthongisation, 23, 37–9
- directionality of borrowing, 64–9
- directionality of sound changes, 115–16, 118–19, 134–5, 137, 174, 202–3, 210
- displacement, 261
- dissimilation, 28–31, 34, 142–3
- distant genetic relationships, 108, 166, 185–6, 299, 309–26
- donor language, 57
- drag chain *see* pull chain
- economy, 119–20, 134–5, 137, 203
- elevation, 263, 272
- ellipsis *see* clipping, displacement
- embedding problem, 195
- emphatic foreignisation, 76–7
- epenthesis, 33–5, 204–5, 208–9
- Ethiopian linguistic area, 305–7
- ethnographic analogy, 339, 357–8
- ethnohistory, 339, 372–3
- etymology, 5–6, 189, 254–5, 280, 320
- euphemism, 263–5, 294, 367
- evaluation problem, 195
- excrecence, 34–5
- extension, 226–34, 241, 244; *see also* widening
- external causes of change, 197–8, 267, 269–70, 279, 283–7, 295
- fading *see* semantic bleaching
- family-tree model, 109–10, 147, 166–77, 187–9
- final devoicing, 38, 174
- focal area, 192
- folk etymology, 67, 100–2
- fricativisation *see* spirantisation
- gemination, 41
- generative approaches, 234–7
- genetic relationship, 108–12, 163–86, 188, 300
- genetic unit, 165
- glottochronology, 177–86, 314–15
- grammatical alternation, 144–5
- grammatical change, 7–15, 226–53, 261, 267
- grammatical correspondences, 317–18
- grammaticalisation, 232, 238–42, 256, 258, 267, 278
- Grassmann's Law, 29–30, 137, 142–3, 145–6
- Great Vowel Shift, 8–9, 23, 39–40, 48, 217, 320, 336
- Grimm's Law, 46–8, 98, 137–45, 283–4, 316, 322
- haplogy, 37
- hispanisms, 58, 66, 70–1, 85–8
- history of linguistics, 2, 193–4
- homophony, 270, 292–4, 296
- hyperbole, 265
- hypercorrection, 76, 99–100
- immediate models, 97–9
- Indian linguistic area *see* South Asian linguistic area
- interference (phonetic interference), 61–3
- internal causes of change, 197–8, 267, 269–70, 286, 295, 297–8
- internal reconstruction, 201–25, 339
- isogloss, 191–2
- isolate, 165, 201
- Junggrammatiker see* Neogrammarians
- Kurgan culture, 340
- laismo*, 91–2
- language, 165, 193
- language acquisition, 234–7
- language contact, 57–89, 147, 184, 188–91, 199, 236, 264, 266, 285, 299–310, 372
- language family, 109–12, 163–9, 171
- lect, 193
- lengthening, 42
- lenition, 41
- lexical change, 7, 9, 13–15, 104–5, 254–81
- lexical reconstruction, 242–4, 246
- lexical replacement, 7, 114, 292–3, 314–15
- lexicostatistics, 177–86
- linguistic area, 299–310
- linguistic geography *see* dialectology
- linguistic homeland, 339, 351–62
- linguistic migration theory, 339, 351–62, 372
- linguistic palaeontology *see* linguistic prehistory
- linguistic prehistory, 108, 186, 339–73
- literary coinage, 273–4
- litotes, 265–6
- loan translations *see* calques
- loanword, 57–71, 64–9, 102, 114, 116, 180–1, 216, 339, 353, 356, 358–9, 362–6
- logographic writing system, 335
- loss, 294–5
- luxury loans, 59–60
- macro-language, 166
- majority-wins principle, 117–19, 121
- markedness, 44

Subject Index

- mass comparison *see* multilateral comparison
 Mayan hieroglyphics, 328, 331–2
 maximum differentiation, 44–5
 maximum diversity, 352, 359–60
 mechanisms of syntactic change, 226–34
 merger, 20–5, 69–71, 73, 148, 174, 195, 235, 294, 329
 Mesoamerican culture area, 365–6
 Mesoamerican linguistic area, 76, 302–4, 307, 365–6
 metanalysis, 103
 metaphor, 241, 258–9, 264
 metathesis, 37
 metonymy, 241, 259–60, 267, 272, 274–5
 metre, 335, 338
 models of linguistic change, 187–200
 monophthongisation, 40
 morphological change, 7–15, 226–53, 261, 267
 morphological conditioning, 288–9, 296
 morphological reconstruction, 246–7
 multilateral comparison, 315–16
 multiple causation, 289, 295, 297–8
 mutual intelligibility, 193
- narrowing, 241, 257–8, 266, 273
 nasal assimilation, 39, 205–6
 nasalisation, 41, 117, 174, 286
 naturalness, 44, 115–16, 129–30, 136, 202, 297
 neoclassical compounds, 276–7
 Neogrammarians, 17–18, 89–90, 105, 146, 187–91, 194, 198, 334
 neologism, 273–80
 network theory, 198
 non-immediate models, 97
 non-phonemic changes, 19–20
 Northwest Coast linguistic area, 39, 73–4, 131, 175, 304, 309–10
 nursery forms, 315, 317, 321, 326
- obscenity avoidance, 263–5
 obsolescence, 279
 occasional spellings, 335–6
 Olmec civilisation, 349, 365–6
 onomastics, 371
 onomatopoeia, 72–3, 279, 315, 317, 320–1, 326
 orthographic changes, 8, 10, 328
- palatalisation, 23–4, 39, 51, 62, 96, 174, 235
 paragoge, 35
 parent language, 109–12
 pejoration *see* degeneration
 philology, 4, 8, 327–38
 phonemic changes, 19–25
 phonological accommodation, 61–3
 phonological reduction, 238–9, 242
 phylum, 166
 place names *see* toponyms
 polysemy, 268
- popular etymology *see* folk etymology
 pre-language, 203
 pre-*proto-language*, 218
 prevention, 289–90, 293, 295–6
 proportional analogy, 90–5
 prothesis, 33
 Proto-Algonquian homeland, 353–4, 361
 Proto-Finno-Ugric culture, 346–9
 Proto-Finno-Ugric homeland, 356–9, 361
 Proto-Indo-European culture, 340–5
 Proto-Indo-European homeland, 340, 351–3, 361
proto-language, 108–62, 201, 218
 Proto-Mayan culture, 349
 Proto-Mixe-Zoquean culture, 349
 Proto-Numic homeland, 354–5
 Proto-Salishan homeland, 355–6
 Proto-Uralic culture, 346–8
 Proto-Uralic homeland, 356–9
 Proto-Uto-Aztecan homeland, 354–5
 pull chain, 44–8
 push chain, 44–8
- rate of loss, 179, 183–4
 rate of retention, 178–80, 183–4
 real-time studies, 196–7
 reanalysis, 103, 226–34, 241–4, 249
 recipient language, 57
 reconstructed vocabulary, 339–62
 reconstruction, 69–71, 108–62, 175–7, 188, 242–51, 299, 307–8, 328, 333, 372
 reflex, 112, 117–19, 121
 regularity principle, 17–18, 95, 123, 126–7, 137–47, 183, 188–91, 194, 198–200, 293, 320, 333–4
 regular sound change, 17–18, 28–31, 34, 37, 293
 relative chronology, 43–4, 51, 71, 148–50, 156–62, 202, 206–15, 224, 367
 relic area, 192–3
 relics *see* archaisms
 retrograde formation *see* back formation
 rhotacism, 36, 96, 211
 root creation, 273–4
 runic alphabet, 10
- semantic bleaching, 238–41
 semantic borrowing *see* calques
 semantic change, 5–6, 11, 13–15, 238–42, 254–73, 279–82, 319–20, 361–2, 367
 semantic loans *see* calques
 shared aberrancy, 317–18, 326
 shared innovation, 170, 172–7, 185–6, 308, 330
 shared retention, 173, 175–6, 308
 shift, 19, 73–4
 shortening, 42–3, 117; *see also* clipping
 simplification, 285
 sister language, 109–12

Subject Index

- sociolinguistics, 193, 195–200, 236, 267, 285, 287, 336
- sound change, 6, 8–9, 11, 16–56, 65, 89, 95–7, 115–21, 137–62, 170, 172–7, 188–91, 194, 198–200, 202–25, 228, 241–2, 288–93, 296, 315–16, 320, 322–3, 328–34
- sound correspondence, 67, 112–45, 148–62, 175–6, 308, 315–17, 326, 333, 353
- sound laws *see* sound change
- sound symbolism (affective symbolism, expressive symbolism), 72–3, 279, 315, 317
- South Asian linguistic area, 72, 301–2
- specialisation *see* narrowing
- spelling pronunciation, 63, 287
- spirantisation, 42
- split, 22–4, 216
- sporadic sound change, 6, 9, 17, 28–33, 35, 37
- Sprachbund* *see* linguistic area
- spurious forms, 325–6
- Stammbaum *see* family-tree model
- stock, 166
- strengthening, 41
- Sturtevant's paradox, 95
- subfamily *see* subgroup
- subgroup, subgrouping, 117–19, 163–77, 186, 299, 307–8, 328, 330–1, 352
- submerged features *see* shared aberrancy
- substratum, 285
- surface manifestation, 227
- Swadesh list, 178–83
- syllabaries, 335
- symmetry, 44, 129–30, 136
- synchronic linguistics, 4
- syncope, 31–2, 35, 43
- synecdoche, 260–1
- syntactic blends, 105
- syntactic borrowing, 230–1, 244–6, 364
- syntactic change, 7–15, 226–53, 261, 267
- syntactic reconstruction, 242–51
- taboo replacement, 6, 183, 263–5, 367
- therapy, 289–92, 295–6
- theories of language change, 282–98
- toponyms, 339, 368–72
- transition problem, 195, 199
- typology, 120, 130–1, 136, 202, 323
- umlaut, 22–3, 28, 43, 70, 93, 95, 217, 254
- unconditioned sound changes, 18–20, 23–5, 215–16
- universals, 120, 297–8, 300
- variable, 196
- Verner's law, 96, 137, 143–6
- vocabulary change *see* lexical change
- vocabulary loss, 5, 9, 279, 292–3
- voicing, 38, 51, 212–15
- wave theory, 187–91
- weakening *see* lenition, semantic bleaching
- widening, 256–7, 266–7
- word order changes, 227, 241
- Wörter und Sachen*, 367–8, 370
- writing systems, 328, 335, 338, 345
- written records, 327–38, 345

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